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ABSTRACT

This annual issue of the Illinois Council for the Gifted Journal includes 20 articles focusing on young gifted children. Titles and authors are: "How Can I Tell If My Preschooler is Gifted?" (Susan Golant); "Early Childhood Education for the Gifted: The Need for Intense Study and Observation" (Maurice Fisher); "Assessing Gifted and Talented Children" (James Webb); "Early Assessment of Exceptional Potential" (Beverly Shaklee and Jane Rohrer); "Teacher Assessment of Preschool and Primary Giftedness" (Jane Wolfe and W. Thomas Southern); "Characteristics of Gifted Children and How Parents and Teachers Can Cope with Them" (Annemarie Roeper); "The Needs of the Young Gifted Child (A Short and Incomplete Overview)" (Annemarie Roeper); "The Whole Child and the Gift--Nurturing Our Very Young Gifted Students" (Dorothy Massalski); "Integrating the Gifted Child into Family Life" (Caryl Krueger); "Family Factors in the Adult Success of High-IQ Children" (Rena Subotnik and James Borland); "The ABC's of Curriculum for Gifted 5-Year-Olds: Alphabet, Blocks and Chess?" (Susan Kaplan); "Teaching Thinking Early" (Anne Crabbe and Pat Hoelscher); "Greater Gifts Than These" (Susan Belgrad); "Creating a Nurturing Classroom Environment" (Laura Requarth); "Education of Young Gifted Children" (Peggy Snowden); "Intuition is for the Learning" (Don Rapp); "Cooperative Learning: A Wolf in Sheep's Clothing" (Susan Linnemeyer); "Reaching All Students in a Heterogeneous Classroom Through Whole Language" (Margaret Bryant); "Gifted Education: To Be or Not to Be?" (Kathy Hagstrom); "From Ownership to 'Allship': Building a Conceptual Framework for Education of the Gifted and Creative" (LeoNora Cohen). Two additional articles are: "My Life and How it Grew" (Julian Stanley) and "What the Gifted Need: Toward a General Unified Plan for Gifted Education" (Jessie H. Sanders and Leonard H. Sanders). (DB)

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INTRODUCTION

Joan Franklin Smutny, Editor
Director of The Center for Gifted, National-Louis University, Evanston, Illinois

In the 1830's, Wilhelm Froebel of Germany coined the term, "kindergarten," which is literally translated, "children's garden." As Froebel envisioned it, kindergarten was a place where a young child's unique abilities could germinate. Gently and with keen sensitivity, the educator, or keeper of the garden, would preserve, protect and nurture the child's inherent joy and sense of wonder. Careful cultivation at this early age would turn the child naturally toward the light of knowledge, thereby enlightening his or her perspective toward learning, work and play. By so enriching the whole of the child's educational experience, the whole child, the "full corn in the ear," would blossom in due season.

From today's perspective, it seems a marvel that a gentleman who emerged amid the dawn of the Industrial Revolution and its particular mind sets could speak so perceptively in terms of the natural unfoldment of the child and the importance of recognizing and nurturing his capabilities and talents, to achieve balance in the physical, intellectual, moral, and spiritual culture of this young child.

Recently, a parallel appreciation among educators regarding the special needs of the young gifted child has emerged. In an effort to bring these ideas and ideals to a higher level of awareness, this issue of the ***Journal*** is dedicated to this long-overdue trend in the field of gifted education. It is our privilege to share with you a splendid collection of insights, experiences, observations and recommendations in regard to identifying, nurturing and appropriately educating the gifted young child, from some of the fine thinkers and doers in this underrated and often highly neglected area. Parents of young children, pre-school and kindergarten teachers, as well as practitioners in early childhood and gifted education, will find a rich harvest of information and guidance among the pages of this issue. It is our hope that myths will be dispelled and more accurate perspectives concerning the essentiality of focus on the gifted young child will be gained--and disseminated.

The first section, "Identifying the Young Gifted Child," opens with Susan Golant's summation of what she feels are the most important qualities expressed in the young gifted child — "a love of learning, a burning curiosity about the world and how it works, a sense of excitement over a new discovery, and an ability to integrate information and create a new reality." Maurice Fisher and James Webb, two leaders and writers in gifted education, provide significant insights into various approaches and testing used to identify giftedness in young children. Beverly Shaklee, another well-known leader, and Jane Rohrer, an instructor in special education, share an important report on the activities of the "Early Assessment of Exceptional Potential" project, designed to determine gifted potential in young children — especially those who might be overlooked by standardized testing. Educators Jane Wolfe and W. Thomas Southern discuss persuasively an empirical study they performed to determine what teachers perceive as gifted behavior in their preschool students.

In the second section, "Nurturing the Young Gifted Child," Annemarie Roeper, a pioneer in gifted education, identifies characteristics of gifted children and how parents and teachers can effectively respond to them. In a companion piece, Roeper provides a brief statement outlining various needs of the young gifted child. Dorothy Massalski, early childhood teacher, provides incisive observations from a teacher's perspective on the need to maintain a sense of patience and balance while educating the young gifted and talented child. The reader will find substantive advice from Caryl Krueger, author of many books for parents and grandparents, whose article here features ideas on creating a home atmosphere that provides a nurturing environment — for the gifted child in particular and the entire family in general. Recent research by known gifted educators Rena Subotnik and James Borland poses some provocative questions regarding the effect that parents have on their gifted child's success or failure in his or her chosen career as a gifted adult.

The reader may pick up a few new chess moves, as well as learn an important lesson on dispelling preconceived notions about "developmentally appropriate curriculum," in teacher Susan Kaplan's article which appears in this issue's third section, "Curriculum for Young Gifted Children." Learning how to think, not just what to think, is the underlying theme presented by gifted practitioners Anne Crabbe and Pat Hoelscher. The two authors discuss an academic adventure upon which they embarked, "The Future Problem Solving Program," which, they concur, augments the basic school curriculum by employing the creative, six-step problem-solving process developed by Alex Osborn and Sidney Parnes. The ingenious qualities of the Froebel Gifts are delightfully illustrated by Susan Belgrad, early childhood educator, with the help of her gifted son and his third-grade classmates.

Continuing in the same section, teacher Laura Requarth shares diversified teaching strategies to assist educators and parents in nurturing children emotionally as well as academically. Early childhood educator Peggy Snowden emphasizes that teachers of young gifted children must be conversant with the theoretical, philosophical, and empirical bases of early childhood education, special education and programs specifically designed to meet the needs of gifted children. Snowden includes several exhaustive resource lists covering topics such as specific characteristics of the gifted child, general curriculum components, instructional guidelines, and teacher roles for educating primary and preprimary students — those who have been identified as gifted and those who have not.

With an unorthodox approach, educator Don Rapp communicates four "training points" he uses to develop intuition, which provide his basis for establishing a curriculum that can awaken in a child an increased ability to succeed mentally, physically, emotionally, and socially.

This issue's last section, "Educational Programs for Young Gifted Children," includes different perspectives on cooperative learning and whole language. Educator and researcher Susan Linnemeyer vigorously takes the offensive, describing what she labels "ten major failings" or misrepresentations of cooperative learning in regard to the gifted and talented. Contrariwise, educator Margaret Bryant contends that a "whole language method of teaching young children to read is highly effective, when combined with individual and group writing activities." Considering the fact that most school districts are facing tighter budgets, greater scrutiny from taxpayers and governmental agencies, as well as increased demands for accountability, this whole language approach, Bryant contends, is a winner for all involved. Parent and gifted advocate from Chicago, Kathy Hagstrom pleads for the right of the gifted child to have educational programs tailored to his or her needs, as do most children belonging to other, special populations.

LeoNora Cohen, gifted educator currently working in Australia, champions the idea of building a "metatheory" to explain the development of creative intelligence, an approach she believes would be central to the education of gifted and creative youth. Cohen presents a rigorous and scholarly argument that such theory development is needed "to unite the bits and pieces of fragmented practices that characterize the field of gifted education."

On April 19, 1992, a symposium was held in San Francisco entitled "From Psychometrics to Gifted." The purpose of this conference was to pay tribute to Julian Stanley, a leading contributor to gifted education. In honor of the event and the educator, we present an excerpt from *Reflections: Personal Essays by 33 Distinguished Educators*, recently published by Phi Delta Kappa (1991), which highlights Stanley's life work.

Finally, the president of Illinois Council for the Gifted, Jessie Sanders, and her son, Leonard, offer a commentary on a general unified plan for gifted education.

Elizabeth Peabody, an American pioneer in preschool education who became an enthusiastic convert to Wilhelm Froebel's teachings, founded one of the first kindergartens in the United States in the 1860's, and spent much of her energies communicating and promoting Froebel's revolutionary vision that recognized and appreciated the inner capabilities and talents of the very young child. It is our hope, dear reader, that you, too, will become a committed advocate for the gifted young child, in your activities as administrator, counselor, teacher or parent. This expansion of thought will serve to correct the stereotypes imposed upon our young and gifted, thereby cultivating our "children's garden," with the intent of enabling the bright, young child to benefit from the support of both early childhood educators and advocates of gifted.

HOW CAN I TELL IF MY PRESCHOOLER IS GIFTED?

Susan Golant, Author & Consultant, Los Angeles, California

. . . Queen Elizabeth I (1533-1603) . . . by the age of 6 was proficient in both Latin and Greek, could speak and write French fluently, play the lute and the virginals, and was an accomplished needlewoman. Such attainments today would rank her as a prodigy, but then were no more than what was expected of a royal princess....

. . . Einstein set down in the Australian bush a century ago would no longer be a genius, since he would not be very good at finding witchetty grubs and waterholes. --Child Prodigies and Exceptional Early Achievers, John Radford.

Alas, there are as many definitions of giftedness as there are gifted people. Certainly a high score on an IQ test is a start, but today all the experts agree that IQ tests cannot measure the incalculable complexity of the human spirit or the light that shines from within, when a new idea takes hold. Many forms of intelligence such as musical ability, inter- and intra-personal skills, athleticism, and creativity simply aren't measured on standardized IQ tests.

Before we even begin to define giftedness as we know it, let us also keep in mind that our personal designation is relative, based upon our own culture and values. Richard Bothmer makes this point in a recent article published in the journal *Gifted Children Today*. He explains that giftedness is simply a state of mind--a reflection of one's culture at any given moment in time: Suppose you were in the Australian outback with a bunch of Aborigines. . . . How much weight do you think vocabulary and verbal ability carry? Very little, of course; they are heavily into performance. Prized, here, is the ability to seek out fat lizards that can be wrung dry of juices for refreshment and then roasted. The person who has the talent to do this best is clearly in the highly superior category in that time and place.

Bothmer's point is well taken. What we call giftedness, may be an absolutely useless concept among other peoples. "The title of `gifted,'" he concludes, "is always a political decision. It is based on the local society's view of what is a rare and valuable ability. And this is subject to change as the society evolves."

"Giftedness" is also dependent on timing and perhaps more than a little luck. It has been pointed out by other psychologists that Einstein (he seems to be everyone's favorite example) might not have fared as well, had he been born fifty years earlier; the world might not have been ready for what he had to offer. Michelangelo, Leonardo da Vinci, and Rembrandt may also have struggled for recognition had they lived in Manhattan during the 1960's. As Abraham J. Tannenbaum explains in a chapter of the book *Conceptions of Giftedness*, a person's talents must match society's readiness to appreciate them, otherwise they are "stillborn"--either passe or too avant-garde.

At the moment, we're all part of late twentieth century western civilization. What does our society value as being a rare ability? Clearly, it's not simply a high score on an IQ test. Again, we are faced with many conflicting views about the nature of giftedness. Indeed, in the excellent book *Conceptions of Giftedness*, Drs. Robert Sternberg and Janet Davidson of Yale University have amassed some 17 interrelated yet distinct viewpoints of giftedness from as many experts.

None of this makes a job as a parent any easier, but understanding giftedness is not impossible either. I believe that children are gifted when they show a love of learning, a burning curiosity about the world and how it works, a sense of excitement over a new discovery, an ability to integrate information and create a new reality.

As parents, perhaps one of the easiest ways to identify giftedness, is to observe a child's behavior. Often a child's activities are the gentle footprints of his hidden thought processes.

It's the Little Things

Many experts point to a child's advanced sense of humor as indication of giftedness. In fact, one of the early signs of a child's giftedness is his ability to find incongruities humorous.

We derived great enjoyment, for example, from our daughter Cherie's sense of humor while she was still a baby. When Cherie was less than ten months old, she giggled if we pretended to suck on her pacifier or bottle. She thought it hilarious when we wore her training pants or her little jeans on our heads and she absolutely cracked up when we tried to clothe her in the same absurd manner.

Indeed, "funny dress-up" became one of Cherie's most enjoyable games. We have pictures of her as a toddler decked out in my sister's wooden clogs, my vintage 1969 knee-length boots (the kind that went with mini skirts), and all manner of knit caps, berets, straw hats, scarves, shower caps, sailor hats, Sherlock Holmes caps, even plastic tupperware containers on her head. The best outfit included cone-shaped party hats over her ears, one pointing east, the other one, due west.

Cherie also displayed her giftedness at play. She had an enormous attention span. We salvaged many a Sunday morning by allowing her to entertain herself. One of us would respond to her 6 A.M. call by placing her playschool or playhouse in the crib. At the age of two, she could sit there, absorbed with it for an hour or more at a time, singing nursery rhymes, humming, and talking to herself.

Of course, when I was busy with dinner or needed to study and wanted Cherie to occupy herself in her playpen, she would have nothing of it. When I complained to my mother that other babies seemed content with that arrangement, my mother wisely noted that Cherie was no dummy: she wanted to be where the action was.

Cherie's ability to engage in complex imaginative play flowered as she grew. At the age of five, she and her best friend, a child of similar temperament and abilities, constructed entire Barbie doll villages on her bedroom floor, improvising linens, furniture, and buildings with shoe boxes, tissues, cotton balls, paper clip dispensers, wooden blocks, Legos, empty oatmeal boxes and what-

ever else the two of them could scavenge from the toy box or my kitchen, closet, and desk.

The girls would engage in their building activity for hours. Usually by the time the city was erected, it was time for dinner and bed and I had the unenviable task of asking them to clean up so that we wouldn't step on the toys and break them (or our toes). This, as you can imagine, was met with howls of displeasure. "But we just started to play," they protested. It never occurred to them that the creation of these towns was a wonderfully imaginative and expansive play experience, in and of itself.

Thinking About Your Own Child

For most parents the label of "gifted" does not come as a surprise. Educators of gifted children have found that we identify our children as being unusual, long before schooling and testing are considered. We're so good at it, in fact that when we err, it tends to be on the side of underestimating our children's abilities.

How do we have this uncanny ability to know that our children are gifted? I believe that our youngsters' abilities reveal themselves to us in the little things that they say or do. In our family, Cherie's unusually advanced vocabulary, her creative play, her long attention span, and her sense of humor all contributed to our intuition that she was indeed gifted.

Other children may display giftedness in other ways:

- Spencer's invention of his own secret alphabet and number code
- The long sentences that Jennifer masters at a very young age along with a certain capacity and willingness to carry on "adult" conversations
- Mark's seemingly endless attention span
- Adrian's use of unusual and sophisticated vocabulary
- Max's fascination with numbers, weights, clocks, and puzzles
- Mara's interest in puns and word play
- Paul's physical dexterity that allows him to throw a ball farther, run faster, and climb higher than his friends
- Carla's sense of humor and flexible thinking
- Michael's boundless curiosity
- Julie's memory of exact detail
- Heather's ability to draw a surprising likeness
- Frank's facility in memorizing and "reading" stories before his peers have mastered these skills
- Janie's perfect pitch
- Josh's adroitness at pulling together seemingly disparate ideas to create a new sense of order or reality

These criteria are only useful as a starting point. Parental informed observations and interpretations may follow to more clearly paint an entire picture of the child.

Early Reading or Early Thinking?

Cherie began reading at the age of three, which I took as evidence of her giftedness. I might have been wrong. On a superficial level we might consider the early acquisition of skills such as reading or writing as indicators of giftedness. But experts are quick to point out that precocity (early or premature development) and giftedness are not necessarily synonymous. Researchers have found, for example, that within a group of bright preschoolers, the best readers are not necessarily the children with the highest IQ scores and conversely, not all children with high IQ scores learn to read early.

Anne-Marie Roeper, headmistress of the Roeper Lower School in Bloomfield, Michigan, explains in an article in the *Gifted Child Quarterly*, that people often confuse giftedness with precociousness. She points out that giftedness is a child's ability to think, to generalize, to see connections, and to use alternatives. The gifted child is not necessarily ahead of others academically. A precocious child, on the other hand, is ahead of others in development, which means that this child will be more able or mature at a particular time. "Other children catch up with the precocious child later."

It's important to know, therefore, that teaching your baby to identify different species of birds or stuffing your four-year-old's head full of math facts will not "make" him gifted. Facts won't do it, but his ability to think will.

Learning Characteristics of Gifted Children

The Ventura County Department of Education in Ventura, California has distributed a list of learning characteristics of gifted children formulated by the late University of California, Los Angeles education professor, May V. Seagoe, that expands on these notions. I've adapted this list to show why parenting a gifted child may be such a joy.

A gifted child may display some or all of the following characteristics:

1. Perceptive and receptive to new ideas; is willing to explore the unknown; is alert and curious; may also be intuitive.
2. Able to abstract, conceptualize, synthesize ideas; enjoys learning, intellectual pursuits, and solving problems.
3. Curious about cause-effect relationships; can apply learned concepts and loves discovering the truth; looks for logical solutions to intellectual problems.
4. Comfortable in structured, orderly settings; likes consistency in dealing with values and numbers; may invent personal number systems, a new calendar, or an alphabet.
5. Capable of retaining material understood after a single exposure.
6. Proficient verbally; may have an unusually varied vocabulary and may express himself easily and abundantly; may love reading and thus acquire a depth of information in many fields.
7. Inquisitive and curious; motivated to learn out of a personal intellectual curiosity rather than through external motivation, such as grades.
8. Capable of thinking critically; may be skeptical and may need to prove ideas to himself.
9. Creative and inventive; may look for novel approaches and find brain-storming exciting.
10. Persistent - able to concentrate on one subject to the exclusion of all else, in order to see a project to its conclusion.

11. Sensitive - may feel empathy for others' plight and may need emotional support for her own issues.
12. Energetic, alert, and eager - may have moments of profound concentration and effort and works on inventing a new product.
13. Independent in work and study; may prefer to work alone and to rely on his or herself.
14. Versatile, enjoys an abundance of varied hobbies and talents.
15. Friendly and outgoing with a strong need to be accepted socially.

Ever-Widening Circles

As our understanding of intelligence has changed over the decades, so has our appreciation of giftedness. It's not so much the acquisition of knowledge, rather as what a child does with the acquired knowledge that seems to be important. Gifted children are innovative; they dream up and solve problems; they invent new ways of thinking; they take apart their radios and make fire with magnifying glasses. Gifted children think deeply and make connections between disparate bits of information; they analyze and hypothesize; they turn a problem around and look at it from a new angle. Gifted children try to make meaning out of the chaos that surrounds them; they wonder and experience wonderment. Gifted children have minds of their own which they use abundantly. This perhaps is the best definition of what it means to be gifted.

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EARLY CHILDHOOD EDUCATION FOR THE GIFTED: THE NEED FOR INTENSE STUDY AND OBSERVATION

Maurice D. Fisher, President, Gifted Education Press, Manassas, Virginia

"All true sciences are the result of experience which has passed through our senses, thus silencing the tongues of litigants. Experience does not feed investigators on dreams, but always proceeds from accurately determined principles, step by step in true sequences to the end...." Leonardo Da Vinci (1452-1519)

What can parents and teachers do to improve the identification of young children who are potentially gifted? A useful answer to this question might help our schools and American society to identify hundreds of thousands of children with high abilities who would usually "slip through the cracks" of screening and identification procedures. If young children with the potential for being/becoming gifted are overlooked during the preschool and primary years, we as educators and parents will miss a crucial opportunity for nurturing and educating our greatest natural resource -- the young gifted children of America.

The main reason that we must improve our success rate in the early identification of the gifted is closely related to the concept of "imprinting" derived from the study of animal behavior or ethology. This concept

means there are critical periods in the development of all animal species, including humankind, during which they are most sensitive to environmental influences and opportunities for learning (Gregory, 1987). The basic skills, characteristics and behaviors which underlie giftedness will develop during the critical period from infancy through five years if the child receives the proper stimulation from parents and teachers for eliciting these skills, etc. Therefore, as in the development of all children, it is essential for children who show potential for being gifted to receive the most stimulating educational and social opportunities during this critical period of their development. These opportunities must include abundant and stimulating conversations between the parent/teacher and child; intriguing games and toys; numerous opportunities to travel to new educational environments such as other cities, houses, buildings, museums and zoos; and stimulating opportunities for play and social interactions with other children, siblings, relatives and other adults.

As important as providing a stimulating environment for developing giftedness is the need to observe behaviors and characteristics which underlie giftedness. Parents and teachers should become more aware of these behaviors and characteristics so they can identify gifted children at an early age. However, we must caution the reader to be sensitive to the term, "potential for giftedness." We believe that giftedness is composed of emerging skills, behaviors and characteristics which may take 20 or more years to develop to the fullest extent possible, and that it is important to look at giftedness as being a potential for great accomplishment rather than a particular characteristic or test score. By perceiving giftedness in this manner, we can open up opportunities for children who may not demonstrate the high test scores or behaviors necessary for being admitted into a gifted program at a particular time. However, with proper encouragement and stimulating educational opportunities, these children may exhibit giftedness later in childhood, in adolescence or as a young adult.

When we discuss giftedness in regard to young children, we are describing something which is exhibiting itself in small and progressive steps. What happens to the future progress of these "gifted" characteristics and behaviors is a function of the child's social, environmental and educational experiences. If giftedness were viewed in this light as a long-term, progressive and emerging capability, there would be fewer problems in identifying children for gifted programs and far less rancor among experts concerning what is the "true" definition of giftedness.

Given that the child is placed in a stimulating environment, similar to the one just described, how does a parent or teacher become skilled in identifying the behaviors and characteristics which form the basis for giftedness in young children? First, it is important to study and become more knowledgeable about the great researchers of child development and early childhood education. In this regard, we highly recommend the works of Jean Piaget, Maria Montessori and Lev Vygotsky. Second, it is important to improve one's observational skills in order to notice certain characteristics and behaviors indicative of giftedness. Let us briefly examine some of the ideas of these giants of child development and early childhood education who unfortunately seem to have been forgotten by many contemporary educators.

Jean Piaget, the famous Swiss psychologist, has much to offer those who want to understand giftedness in young children (Fisher & Fisher, 1981). He said in 1965 that, "Our school system, as much under left-wing as under right-wing regimes, has been constructed by conservatives (from the pedagogic point of view) who were thinking much more in terms of fitting our rising generations into the molds of traditional learning than in terms of training inventive and critical minds. From the point of view of society's present needs, it is apparent that those old molds are cracking in order to make way for broader, more flexible systems and more active methods...." Piaget's detailed and systematic observations are the basis for studying the growth of reasoning abilities in young children and their understanding of the world. This extensive research (Piaget, 1967; Gruber & Voneche, 1977) on the Sensori-Motor, Pre-Operational and Operational stages of development can be used by teachers and parents to better understand how reasoning processes follow certain fixed stages of development. Furthermore, Piaget's examination of how children perform on conservation of substance, space, time, number, volume and quantity tasks illustrates how children form their perceptions of the world through constant interactions between their innate reasoning abilities, and the physical, psychological and social world. By studying the work of this eminent psychologist and philosopher, we can learn an enormous amount about what types of reasoning abilities to look for in potentially gifted children and whether these abilities are advanced far beyond those expected for a child's particular chronological age.

The work of Maria Montessori (Fisher & Fisher, 1981), provides teachers and parents with benchmarks of advanced development. She said, "No one can be free unless he is independent: therefore, the first, active manifestations of the child's individual liberty must be so guided that through this activity he may arrive at independence. Little children, from the moment in which they are weaned, are making their way toward independence." (1912) We recommend her seminal book *The Montessori Method* (1964), for a better understanding of how teachers and parents can create an educational environment that stimulates the high level abilities of children who might not usually behave like they are potentially gifted. We should emphasize that the Dottoressa was trained as a physician. She became interested in education through her medical experiences with children from poor and disadvantaged homes. Based upon these experiences, she decided to design a special school in the slums of Rome, Italy. (Ironically, most American Montessori schools today are located in upper-middle class neighborhoods!) Through her careful observations of young children, she formulated an educational method based upon offering stimulating learning materials organized into a graded sequence of difficulty levels. These materials were organized and presented in a manner which caused children to become self- or intrinsically motivated. We believe that teachers and parents should use Montessori's curriculum ideas

to set up stimulating learning opportunities for potentially gifted children. These children would then be able to "show off" their high abilities with ease and pleasure. Unfortunately, the Montessori movement never became a strong force in America's public schools because the dominant educational influences of the 1920s and 1930s objected to its philosophy and methods. If it were more widely accepted by American educators during the 1920s and included in our present-day curricula, would Montessori's ideas have produced a better public education system for both gifted and non-gifted children? We say yes because of Montessori's emphasis upon the maximum development of each child's unique abilities.

The third giant of early childhood education is Lev Vygotsky (1978), a Russian research psychologist primarily interested in how language affects children's reasoning abilities and social interactions. Like Piaget and Montessori, Vygotsky was a keen observer of children. The most important aspect of his work related to the study of giftedness, was his research on the development of classification and reasoning skills in young children. Unlike Piaget, he believed that human language played a crucial role in the successful development of these skills. Words followed a systematic progression from purely emotional meanings in babies, to concrete designations, to abstract meanings. Vygotsky's research on assessing children's abilities is also important for identifying the gifted because he designed a method of assessment for use by educational psychologists known as the "zone of potential development" -- a method of comparing how children solve problems by themselves and with the help of a teacher. As individuals concerned with the study of giftedness in young children, we should examine Vygotsky's research to learn more about which features of children's language and reasoning demonstrate accelerated learning and exceptional language facility.

By studying the research and writings of these three individuals, what can we conclude about the types of behaviors and learning characteristics indicative of giftedness in young children? Can we develop a systematic observation instrument for use with young children that would be helpful to teachers and parents in identifying those who are potentially gifted? Our work in this area during the last several years has concentrated upon using the ideas and research of Piaget, Montessori and Vygotsky to develop such an instrument (Fisher, 1988; Walters, 1990). We would like to discuss some of the observational categories which have been included in this instrument.

Accelerated Reasoning Abilities

Educators have usually concentrated upon the training of children's reasoning abilities and thinking skills beginning at the upper elementary level and through the secondary level. But Piaget's research demonstrates that these abilities and skills begin in infancy and make significant gains during the preschool and primary years. As Piaget has shown, babies and young children initially reason and solve problems primarily by means of their motor movements. We must systematically observe how children use their motor abilities to reason in order to identify advanced thinkers at the early childhood levels from infancy through ages 3 or 4. In addition, we must observe the sequence of preschoolers' behavior to determine if they are engaging in logical, step-by-step sequences of problem solving. If we observe relatively complex sequences of problem solving in a child between about 2 and 8 years, this behavior is an excellent indicator of giftedness.

INTRINSIC OR SELF-MOTIVATION. The Montessori method concentrates upon developing self-motivation in young children. This is achieved by designing the proper match between the child's ability and the difficulty level of the curriculum. If a young child consistently demonstrates this type of motivation in her/his play, problem solving behavior, and powers of concentration, then we can validly say this child exhibits a characteristic of giftedness. Related to intrinsic motivation is the child's willingness to spend large amounts of time on difficult tasks, to work independently, and to attend to solving problems for much longer periods than is typical for his or her age level. The eminent psychologist, J. McV. Hunt (1961), said that intrinsic motivation was the key to high levels of learning and achievement. He was the first American psychologist (in the 1960s) to show his colleagues how the study of Piaget and Montessori can help educators to design learning environments which encourage children to become self-motivated. A more recent exploration of the importance of self-motivation is discussed by Csikszentmihalyi as related to what he calls "flow" behavior (1990).

ACCELERATED MUSICAL ABILITIES. All great musical geniuses such as Mozart and Hadyn exhibited their abilities at an early age. Composing and playing music involve the use of extensive and complex cognitive skills such as reasoning, classification, encoding musical sounds into musical scores, and rhythmic interpretation. A child who shows early musical ability is not only engaging in aesthetic and affective activities, but is also using complex reasoning abilities. Therefore, musical abilities (both performance and composition) in young children are clear indicators of the ability to think and reason effectively.

ADVANCED MEMORY ABILITIES. Dr Mary Meeker has said that the single best measure of giftedness, based upon her Structure of Intellect research, is high level memory (1991). Why? The physiological and mental operations which underlie an excellent memory are related to the ability to recall many different events/things from the past in a coherent fashion, and to recall complex ideas quickly and vividly. In regard to memory, the great psychologist William James said, "The one who thinks over his experiences most, and weaves them into systematic relations with each other will be at one with the best memory."

SENSIBILITY, THE SINE QUA NON OF GIFTEDNESS. This characteristic of giftedness is seriously overlooked in selecting program participants mainly because it is difficult to measure with a standardized test, and it does not "fit in" with current behaviorist approaches to measuring human abilities. Through our research and observation we have concluded that giftedness is almost synonymous with high levels of sensibility. By this, we mean that gifted children show high levels of awareness to the nuances and gradations of different ideas, problems, theories and methods in art, music, literature, history, politics and the sciences. The

result of this sensibility is to engage in behaviors we typically associate with giftedness, such as an interdisciplinary attitude towards learning, ethical awareness and analysis, concern with learning both content and process, an affinity for discussing ideas and problems, preference for higher level thinking, and the need for ongoing challenges from teachers, parents and peers. Sensibility involves a unique way of perceiving the world as demonstrated by the writings, compositions, artistic creations and theories of great authors, musicians, painters and scientists.

We also have concluded that the behaviors and characteristics of potentially gifted children discussed in this essay, such as high level problem solving and memory, culminate in producing the high levels of sensibility associated with giftedness. Although most types of sensibility are not expressed until the upper elementary and secondary levels, preschoolers can show some basic forms of sensibility which combine their reasoning abilities with divergent production skills. For example, a 4-year-old might become very interested in the "flying images" in Chagall's paintings and tell imaginative stories about what they mean. Or a 5-year-old might become very concerned with the plight of homeless people and organize his/her kindergarten to send food or money to groups serving the homeless.

Conclusion

Educators of the gifted should not abandon standardized tests in identifying young children who are potentially gifted. These tests such as the Stanford-Binet and Wechsler Preschool and Primary Scales of Intelligence have a long and illustrious history in identifying the gifted. During the last 60 years, Lewis M. Terman's conception of giftedness (1925) based upon using IQ tests has been the predominant force in the gifted field. His identification procedure served many commendable purposes in the early days of this field, such as the use of standardized procedures for assessing children's abilities, and the design of statistically reliable and valid normative scales (deviation IQs) for comparing children's abilities. However, because of the educational and social dynamics of the 1990s, we highly recommend that identification procedures be reconceptualized to reflect the needs of our current society and today's students. Instead of "identifying the gifted," the classroom teacher in cooperation with parents and gifted program personnel should become more concerned with documenting giftedness as a dynamic combination of in-school and out-of-school behaviors and characteristics. This documentation process will require teachers to become highly skilled at observing and recording those behaviors associated with giftedness. The foundation for honing such skills depends upon first studying the great observers of young children such as Piaget, Montessori and Vygotsky. By systematically studying these individuals and applying what they have learned to screening and identification, teachers will add an important ingredient to the selection process -- the observation of giftedness in action. Furthermore, teachers will have more control over selecting children for gifted programs because their observations will become equal in importance to psychologists' test results.

In summary, our main ideas related to identifying young children for gifted programs are as follows (based on a paper presented at the 1991 meeting of the Pennsylvania Association for Gifted Education):

1. Educators of young children need to place more emphasis upon observing and recording the behaviors and characteristics which underlie giftedness.
2. The identification of the gifted must start in the classroom based upon the teacher's observations of her/his students' behavior.
3. Educators of the gifted need to systematically establish BEHAVIOR DATA BANKS of gifted behaviors for use in training teachers to know "what to look for" in their classrooms.
4. Behavioral assessments of giftedness can be effectively used to identify different types of giftedness and to select gifted children from different ethnic groups.
5. The concept of SENSIBILITY underlies effective and useful behavioral indicators of giftedness.

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ASSESSING GIFTED AND TALENTED CHILDREN

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Although retarded children have long been considered appropriate subjects for psychological study, gifted and talented children - those with substantially above average intelligence or creativity - have been largely neglected by psychologists. Even though children defined as gifted (typically the upper three to five percent) comprise generally the same percent of the population as those called retarded, emphasis is placed far more heavily in clinical training and practice on those functioning two standard deviation units or more below average. Research efforts and emphasis within the field of psychology have been episodic and small, with the most recent coordinated efforts culminating in the 1985 publication by the American Psychological Association of The Gifted and Talented: Developmental Perspectives (Horowitz and O'Brien, 1985). This volume attempted to crystallize the scattered information existing about gifted and talented children, and to invigorate the interest of psychologists.

In their graduate training, most psychologists' exposure to the topic consists of a brief review of the classic Terman studies (Terman, et al., 1925; 1926; 1930; 1947; 1959), with emphasis being placed on the research. Most often, the conclusion reached is that the Terman studies show that gifted children are generally physically healthier, socially better adjusted, and mentally and academically superior. These results imply that gifted children naturally are better at coping and solving life's problems, or in fact have no problems.

Little attention is given to problematic characteristics of children labeled "gifted" or "talented," and even less to the methods of assessment or implications for the child and the family. Even follow-up reports on the long-term Terman studies (e.g., Coleman, 1980) have minimized the proportion of underachievers and those with emotional problems - some 20% - in the Terman subjects, and only rarely is it noted that the sample selection procedures used by Terman may have biased the results since they tended to exclude children who were likely to have personal or emotional maladjustments. Indeed, as a result, more than one young psychologist has received advice on the order of, "Beyond IQ 130, intelligence test scores don't matter; you can discontinue testing."

The attitudes of psychologists and other health care professionals appear to reflect the views of current society. The notion prevails that gifted children have no special needs, require little attention, and (like cream) will simply rise to the top if they receive only benign neglect. Despite the Marland Report (1972) of the U.S. Department of Education that "Gifted and talented children are, in fact, deprived and can suffer psychological damage and permanent impairment of their abilities to function well...." there exists a cultural ambivalence toward gifted children. That is, leaders in government, education and society at large make statements like "We need our brightest minds; they are our nation's greatest resource." But simultaneously, many such persons protest against special programs or focus being given to children of high potential, lest we become "elitist."

This cultural ambivalence results in substantial numbers of children with unusual talent and ability being unidentified receiving little (if any) special focus to develop their potential, and indeed being criticized, rejected, and even punished for exhibiting the very characteristics that are part of their high potential (Webb, Meckstroth and Tolan, 1982). Our country's educational systems most often focus on basic minimal competence, and exert subtle pressures to conform to mediocrity (a notable exception to this is in school sponsored athletics). As a result, gifted children are "mainstreamed." Teachers struggle to adequately stimulate and challenge these youngsters in the regular classroom. Families often find the child's creativity, intensity and curiosity to be burdensome and irritating. Peers often find the gifted child's interests to be discrepant and puzzling. Gifted children, themselves, question why they seem to feel different.

Early screening, identification and guidance of gifted children and their families by health care professionals is warranted, not only for appropriate educational planning, but perhaps more importantly so that the family, through understanding and supportive behaviors, can avoid or ameliorate problems which gifted children might otherwise experience later in childhood or even adult life (Hayden, 1985; Whitmore, 1980). Some of the problems most often noted for gifted children of school age are ones of underachievement, peer relation difficulties, intense sibling rivalry, poor self-concept, perfectionism, and depression (Webb, et al. 1982). For preschool gifted children, particularly if the child has not been identified as potentially gifted, the problems more often involve family disruptions concerning discipline issues, sibling and peer problems, impatience or intolerance of self and others, hyperactive-like behaviors, and questions of school readiness and early entrance to school. Sometimes the problems are ones of parental enmeshment, where one or both parents overly identify with the child's intellectual and creative behaviors. This problem can, in fact, arise directly from identification of the child as gifted or talented, and caution is needed that this labeling does not result in accelerated expectations which are not appropriate for the child (Colangelo and Fleuridas, 1986). Most often, such enmeshment and inappropriate expectations occur (if at all) in the early stages after the child is identified, and decrease markedly as the parents become more knowledgeable about gifted and talented children.

Definition

Although individual states have varying definitions (Karnes and Johnson, 1986) which generally are calculated to identify approximately three to five percent of the children, these many definitions derive basically from the U.S. Department of Education

Marland Report (1972) which stated:

Gifted and talented children are those identified by professionally qualified persons who by virtue of outstanding abilities are capable of high performance. These are children who require differentiated educational programs and services beyond those normally provided by the regular school program in order to realize their contribution to self and society. Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas: general intellectual ability, specific academic aptitude, creative or productive thinking, leadership ability, and visual, performing arts, and psychomotor ability.

In subsequent rules and regulations, this definition has been adapted and modified to exclude the category of psychomotor ability since that ability referred primarily to athletes whose "gifts" already seemed to be sufficiently recognized and supported by society.

Although in educational and psychological conceptualization the Marland definition may be useful, the focus in practice has been almost exclusively on the first two categories, that is, intellectual ability and specific academic aptitude (Fox 1981). Thus, "giftedness" is typically treated as though it were synonymous with intelligence test scores and/or academic achievement test scores or educational achievements. Far less attention is given to areas of creativity, leadership and visual or performing arts except in a few states or local communities. There does, however, seem to be increasing recognition in psychology and education that giftedness is not necessarily a "g" factor, and that persons are not (and need not be) necessarily gifted in all areas. That is, persons may have unusual potential or ability in only one, two or several areas, and still qualify as being "gifted." In the past, such a pattern would probably have been referred to as "talented" as distinct from "gifted," but more recently the two terms are being treated synonymously.

A further limitation of the Marland Report definition, and derivatives of it, is that such definitions are far more applicable to school-age youngsters than to preschool children. That is, it makes little sense to talk about the academic achievement of a preschool child, and probably in similar fashion it is difficult to consider creativity, leadership, etc. in children of that age. No agreed upon definition or description of gifted preschool children yet exists.

Despite the emerging definitions and variations in how they are implemented in various locales, and even with the lack of current national standards for operationally defining gifted and talented children - particularly pre-school gifted children - psychologists, and other health care professionals, have an important professional role. The reader is reminded that the Marland Report definition, and derivatives of it, is generic both in its use of such language as "outstanding abilities.... capable of high performance" and "identified by professionally qualified persons..." What these abilities are, and who are the professionally qualified persons certainly seem to be appropriate domains for psychology, as well as for educators and other professionals.

As discussed subsequently, formal tests of intellect, creativity, leadership, etc. in preschool children have notable limitations regarding reliability and validity. Although such formal assessment approaches can be used (with suitable caution) for screening and identification, professionals usually will find it more helpful to directly consider behaviors characteristically shown by pre-school gifted children. Many of these behaviors underlie the formal definition listed above, and appear to be indicators and precursors of a child's potential to meet the requirements of the Marland definition. The following list of behaviors has been adapted from such sources as Webb, et al. (1982).

- Unusually large vocabulary and complex sentence structure for their age.
- Greater comprehension of subtleties of language.
- Longer attention span, persistence and intense concentration
- Wide range of interests
- Highly developed curiosity and limitless questions.
- Interest in experimenting and doing things differently
- Tendency to put ideas or things together in ways that are unusual or not obvious (divergent thinking).
- Learns basic skills more quickly, with less practice.
- Largely teach themselves to read and write as preschoolers
- Able to retain much information; unusual memory.
- Imaginary playmates.
- Unusual sense of humor.
- Desire to organize people and things, primarily through devising complex games.

Pre-evaluation Considerations

Prior to formal assessment, it is essential to gather information from the parents, and probably also important to gain additional information from the child's preschool teacher or pediatrician. Certainly the latter is needed if a visual, motor or other handicap is also present since many intellectually gifted children with physical handicaps (such as cerebral palsy, vision, hearing or perceptual problems) are overlooked (Maker and Whitmore, 1987).

In part the background information collected will be the customary developmental milestones such as the Gesell norms (Ames, et al., 1979); in part it will be the parents' observations concerning these developmental milestones, as well as concerning the presence or absence of the behaviors listed above. Although more important for counseling than for identification of a child as "gifted," information should be gathered about the parents' expectations and perceptions regarding the relationship between the child's abilities and the behaviors being shown. That is, are the child's abilities and behaviors an undue source of pride, a puzzlement to parents, a problem to be squelched, etc.

The professional should recognize that the statement "Every parent has a gifted child" is a myth, along with the categorical assertion that "Gifted children are a joy to raise." Certainly these are true statements on occasion, but with gifted youngsters clearly are not universal. Some parents, indeed, are overly enmeshed and ego-involved with their preschoolers - particularly

first-born - and are "pushy parents" who produce a "hurried child" (Elkind, 1981). More often, parents of gifted children are surprised, puzzled, and even doubting that their child's behaviors are outgrowths of unusual intellectual and creative potential. This difficulty in attributing the child's behaviors to intellectual or creative precocity seems particularly likely when the parents are of superior intelligence themselves, since the child's intellectual endeavors often seem "average" to them from their own familial experience.

In their assessment, professionals must also realize that most parents (and children) dislike the term "gifted" and react negatively to it, or equate the term with "genius." Commonly, parents are shy about discussing "giftedness," partly due to their internalized reluctance to have a child that is different, and partly because most often parents quickly develop a history of negative interactions where friends and relatives have made disparaging comments when the parents attempted to discuss their child's unusual abilities.

In evaluating a gifted child, it is important for the professional to distinguish between profoundly gifted youngsters, and those who are "only" of superior abilities and potential. The implications for assessment and intervention with a family clearly vary if the child is profoundly gifted. As professionals review the literature, they unfortunately will find that reference most often is simply made to "gifted" in contrast to "non-gifted" children, as though all gifted children were the same, and as though "giftedness" is an "either-or" thing. It should be borne in mind that it makes no more sense to consider all gifted children the same than it does to consider all retarded children to be of equal ability and to have identical characteristics.

In IQ terms, a score of 155 or above is generally taken to suggest that a child is profoundly gifted (Albert, 1971), while an IQ score of 130 to 155 simply is called "gifted." Intellectually, the profoundly gifted child - particularly above IQ of 165 - is so clearly different as to be of the sort that likely would be called a prodigy. Behaviorally, the differences appear to be similarly extraordinary, with the characteristics listed above likely to be present to a greater, more pervasive, and more intense degree within the child, and to appear much earlier in the child's life (Grost, 1970). Profoundly gifted children are ones for whom intellectual stimulation and/or creative expression are clearly emotional needs that may appear to be as intense as the physiological needs of hunger or thirst.

Ironically, although the concept of profoundly gifted individuals has been present for centuries (Albert, 1971), the scoring norms for most current measures of intelligence typically go at most only four standard deviation units above the mean (i.e., an IQ score of 160), thus precluding much detailed information about the extent and types of abilities of those persons who score above the norms.

Despite a widespread belief that persons obtaining IQ scores above 160 are so rare as to be negligible, current experience by the present author (and others) is bringing this matter into question. Based on the normal curve, only one out of 33,000 individuals should have an IQ score of 160 or above, and only one in 1,000,000 should have an IQ of 180 and above (Sattler, 1988). Instead, field reports are suggesting that approximately twice as many persons as would be expected obtain IQ scores above 160, and more than three times as many above IQ 180. To use a concrete example, in southwestern Ohio the author has tested well over twenty individuals who obtained IQ scores in excess of 160, and an additional six who scored above 180. (Note: Pro-rating formulas and procedures to exceed the tabled norm values in testing manuals can be found in Sattler, 1988, in Reynolds and Clark, 1986, and in the test manuals for the Stanford-Binet. Form L-M, of Terman and Merrill, 1973. As of now, the Fourth Edition of the Binet offers no such provision for extrapolation). The reason for so many persons exceeding the tabled norm values is unclear, with the possibilities ranging from inadequate inclusion in the normative samples, to hypotheses that the upper end of the intellectual spectrum may not follow the normal curve smoothness of function. Whatever the underlying reason, the practicality is that there seems to be a "bump" on the normal IQ curve at about 160, and clearly such individuals are not as rare as many professionals believe. (Note: As will be discussed below, this phenomenon is not likely to be seen with several of the newly normed and revised individual intelligence tests due to an artificial ceiling effect within those tests which sometimes allows scores only two standard deviation units above the mean.

Because so much of psychologists' training focuses on intelligence tests, such as the Wechsler Scales, the Binet, Fourth Edition, etc., it seems easy to speak in IQ terms when talking about gifted children. The public's general familiarity with IQ scores further encourages this. However, in the same way that IQ scores are not synonymous with mental retardation, neither should they be equated with giftedness. For example, measures of creativity show extremely low correlations with measures of intelligence when IQ scores are above about 120 (Amabile, 1983). Similarly, intelligence tests are seldom adequate measures of "talents" in individual areas.

Individual test of intelligence are particularly hindered in measuring giftedness potential when administered to preschool youngsters where developmental spurts and lags occur mentally as well as physically, and where motivation and attention factors are extremely variable from day-to-day and from situation-to-situation. These factors result in low reliabilities for formal test scores. For example, under the age of twenty-four months, tests of intelligence generally correlate less than .50% with later measures of childhood IQ scores (Anastasi, 1988). In some cases the IQ scores increase, while in other cases they decline, sometimes as much as 20 or more IQ points (Roedell, 1980). For gifted children, who are at the extreme of the normal curve distribution, the variability may be even greater from occasion to occasion.

Additionally, recent investigations have raised strong doubts as to the adequacy of current IQ tests to measure "intelligence," since most present tests measure convergent, culturally-bound thinking, rather than including divergent, creative, and innovative mental processes. Perhaps the most salient conceptualization is that of Gardner (1983) who posited at least seven intelligences (linguistic, musical, logical-mathemati-

cal, spatial, bodily-kinesthetic, interpersonal and intrapersonal), only two or three of which are regularly measured by typically used psychometric measures. Admittedly, current IQ tests administered to school-age children do reasonably predict how well such children will do academically in school settings; however, these tests do not adequately measure intelligence in a broader fashion that may well be more germane to success and overall achievement in life.

When examining the IQ tests of groups of gifted pre-schoolers, one is struck by the variability across sub-dimensions of the tests as well as across skill patterns in general (Roedell, 1980). Indeed, the early acquisition by pre-schoolers of advanced academic skills may have a very small relation in regard to obtained measures of intelligence. Some pre-school children with IQ scores above 160 have not yet learned to read, even though generally most gifted children do teach themselves how to read and write prior to entering school. Similarly, cases have been reported where some pre-schoolers with IQ scores as low as 116 were fluent readers by the age of three (Roedell, 1980). The range of levels of academic skills varies more widely among gifted pre-schoolers than among pre-schoolers in general, prompting at least one researcher to note that "intraindividual differences among abilities are the rule, not the exception." (Robinson, 1981). Even so, "it is highly unlikely that preschool children who are extraordinary in one area of mental functioning will be average or below average in all other areas of functioning" (Sattler, 1988). Despite the controversy and the wide range of individual differences, the "g" factor or some other clustering of abilities does seem to be present in most gifted children.

Some particular idiosyncrasies of frequently used tests of intelligence are noteworthy. On the WPPSI, Verbal IQ scores for gifted children generally are significantly higher than Performance IQ scores (Speer, Hawthorne and Buccatello, 1986), and subtests often have an inadequate level of difficulty (Hawthorne, Speer and Buccatello, 1983) which results in many of the these children reaching a ceiling effect on one or more subtests (Jackson, 1980). This ceiling effect significantly hinders the professional from doing an adequate scatter analysis of the WPPSI profile, as well as obscuring how far above the ceiling that child's performance might have gone (Reynolds and Clark, 1986).

Similarly, the Kaufman Assessment Battery for Children (K-ABC) has difficulties with ceiling effects which limit its effectiveness for use with gifted children. As Sattler (1988) notes, "Over half of the subtests on the Simultaneous and Sequential Processing Scales provide maximum scores that are only two standard deviations or less above the mean. The Achievement Scale also has a restricted range." It appears that this ceiling effect is at least one reason why Mental Processing Composite scores from the K-ABC appear to be generally lower than other tests such as the Stanford-Binet, Form L-M and the WISC-R (Kaufman and Kaufman, 1983). It is less clear why the K-ABC and the WISC-R correlate only about .65 for fourth, fifth and sixth grade youngsters (McCallum, Karnes and Edwards, 1984; Naglieri and Anderson, 1985), and even less so (about .35) with children in kindergarten, first and second grades (Moreland and Webb, 1988). Thus, the amount of variance in common between the two tests for gifted youngsters appears to range only from about 13% to 45%. For these reasons, caution should be exercised when using the K-ABC with gifted children, whether pre-school or school age.

The Fourth Edition of the Stanford Binet Intelligence Scale does not appear to have a ceiling effect for pre-school children, but questions about its appropriateness have arisen due to the lengthened administration time for such children, as well as concerns as to whether this test measures the same dimensions as the earlier Form L-M, or whether different and unknown dimensions are being assessed. Correlations between the Fourth Edition and the Form L-M with gifted children samples have been found to range from .27 to .55, suggesting less than 30% of the variance is shared for these two tests with samples of gifted children (Harkins and Webb, 1988).

Other frequently used tests for intellectual screening of pre-school and primary gifted children have been the Peabody Picture Vocabulary Test-Revised (PPVT-R), the Slosson Intelligence Test (Sit), and the McCarthy Scales of Children's Abilities. None of these appears adequate for routine use in identifying pre-school gifted children, though they might have some use for screening purposes. The PPVT-R not only has lower reliability than such tests as the WISC-R, but also the scores for gifted children typically are significantly lower than on tests such as the Stanford-Binet (Bracken, Prasse, and McCallum 1984; Hayes and Martin, 1986). Similarly, scores on the McCarthy Scales for gifted pre-schoolers generally are lower than tests such as the WPPSI and the Stanford-Binet, Form L-M (Jackson, 1980). Scores on the Slosson Intelligence Test, on the other hand, tend to be significantly higher for gifted children than on such tests as the WISC-R (Bondy, Constantino, Norcross and Sheslow, 1984).

Clearly many questions remain to be answered regarding the adequacy of current intelligence tests with pre-school gifted children. The consensus appears to be that, prior to age three, formal tests are of little use. Such measures as the Bayley Scales of Infant Development have only a moderate predictive correlation with later measures of intelligence (Sattler, 1988) that they likely would be helpful only with profoundly gifted children.

Between the ages of three and six, testing may be even more useful but even then these scores have substantially less stability than similar test scores of children beyond age six (Anastasi, 1988, Sattler, 1988). Although IQ scores obtained with gifted children at this age often are an underestimate of later tests scores, not always is this the case. Jackson (1980) reviewed several studies showing that a substantial minority of children who obtained individual test IQ scores above 130 as preschoolers, subsequently obtained scores well below this level when re-tested two or three years later.

Attempts to measure creativity in preschool children, as distinct from measuring intelligence, has met with even less success. Most of the efforts to measure creativity generally have focused on divergent thinking and behaviors, as opposed to convergent thinking or standard achievement. The independence of creativity

as distinct from academic intelligence has been demonstrated in children of varying ages from kindergarten up, and there is suggestive evidence of more than one type of creativity (Wallach, 1970). Formal tests designed expressly for pre-school children are few and relatively invalidated. Such tests as the Wallach and Kogan Creativity Battery (1965), which is designed for kindergarten and elementary school children, can likely be used with gifted preschool children however. This test allows scoring of the child's verbal responses for fluency and uniqueness. The Torrance Tests of Creative Thinking (1974) are also designed for children in kindergarten and above, but can be used with pre-schoolers. The tests measure creative productive thinking both in verbal and in figural dimensions, and allow scoring on fluency, flexibility, originality and, in some aspect, elaboration. The test-retest and predictive validity of both of these tests has been low, however (Jackson, 1980), and has prompted one expert to state that "predictive validity might best be circumvented by considering the quality of the child's responses, rather than simply scoring the number and uniqueness of the answers given" (Crockenburg, 1972).

Even more so regarding creativity than in measuring intelligence, the professional is well advised to examine behaviors of the child, and to conduct an informal assessment of divergent, creative thinking, rather than attempting to rely on a formal testing. Sattler (1988) has suggested a compendium of tasks selected from various measures of creativity, and some of these are listed below. In using these, the professional must carefully consider "the factors that might contribute to the substantial unreliability....such as the emotional atmosphere and time limits of the session, the availability of inspirational cues in the testing room, and so on" (Jackson, 1980). Even so such approaches to creativity, as distinct from measures of intelligence, may provide a fairer assessment of giftedness potential to minority or culturally disadvantaged preschool children (Sattler, 1980).

Some informal creativity measures (Sattler, 1988) that can be used are to ask the child to:

- list new ways to use specific common objects
- list problems that might arise from a common situation
- suggest ways to improve an object
- list different ways in which two things are alike, and how they are different
- suggest what the effects would be if an everyday class of objects (e.g. cars) no longer existed
- list questions that could be asked about a particular picture, or suggest possible outcomes of the scene in the picture.

Because of the various difficulties in formally testing gifted pre-school youngsters, Roedell, Jackson and Robinson (1980) adopted an approach that is particularly appropriate. They noted that "very young children are rarely so consistently cooperative that they can be relied upon to demonstrate the best performance of which they are capable during all phases of a test session. If a session contains several measures.... one's chances of observing evidence of a child's advanced capabilities are greatly increased." Thus they adopted a testing philosophy that "the most meaningful aspect of a young child's test performance is not the child's average level of performance across a wide range of tasks, but the advanced performance demonstrated" (p. 38). Although admittedly an unconventional view, this approach is less likely to overlook a gifted preschool child, and is most in keeping with educational philosophies regarding starting at readiness level in various skill areas. In evaluating pre-school children, it is better to be overly inclusive, than to be inappropriately exclusive.

Thus, in evaluating preschoolers, little emphasis should be given to formal testing of gifted children younger than age four, and where testing is done, the "best performance" model should be used. An exception should be made where it appears that a prodigy is at hand - that is, a child who is clearly functioning in one or more areas at least five to seven years ahead of what would be expected for a child of that age. In such cases, formal testing can provide useful benchmarks of achievement and/or potential that will help in knowing how best to appropriately communicate with the youngster, what sorts of enrichment activities might be most appropriate, and in planning which educational activities and school placement would best match the child's competence.

With gifted preschool youngsters, however, the behavioral observations, and the reports from parent's pediatrician and preschool teacher are generally more important than test scores. It is interesting to note in this regard that when parents are educated as to the general characteristics of gifted children, they are able to identify their preschool children as being gifted at least as accurately as such tests as the Woodcock-Johnson or the Raven Progressive Matrices (Hanson, 1984).

Referral Question

Seldom is a preschool gifted child referred simply for assessment of intellectual or creative potential. Instead, a gifted preschool child far more often is referred for behavioral problems, ostensibly related to "immaturity," with creativity or intelligence rarely being mentioned by the parents nor the professionals making a referral. Some of the more common complaints are as follows:

- High activity level: low impulse control
- Seems too serious for a child that age; raises moral, ethical or philosophical questions
- Always into things; takes things apart
- Perfectionistic, expects too much of self
- Needs very little sleep, but has extremely vivid dreams
- Seems too emotional; gets intensely frustrated where unable to accomplish a goal; throws temper tantrums at such times.
- Can't seem to complete tasks or stay on track
- Seems narcissistic and overly self-absorbed
- Has difficulty relating to age peers; wants to boss them, doesn't share interests expected for that age, spends much time thinking or alone or with older peers.
- Continually asking questions, interrupting others,

showing off knowledge
- "People keep telling me that I have an unusual child."

All of these may be real problems in their own right, and perhaps could be handled in a circumscribed and narrow fashion without considering the concepts of gifted and talented. Our experience, however, suggests that it is far more effective to explore the extent to which these behaviors are accompaniments and outgrowths of unusually high intellect or creativity, lest these behaviors incorrectly be explained as part of some other diagnostic entity such as a conduct disorder. Indeed, in the absence of such information, parents and children alike construct their own rationale for these behaviors.

Parents in particular seem prone to label the above characteristics as problems in discipline, immaturity, or socialization, or occasionally simply as inborn temperament difficulties. When parents learn that these behaviors are normal for many - perhaps most - gifted children, these parents are able to "re-frame" the problem behaviors, allowing themselves to act more appropriately with support and guidance to shape these behaviors, rather than to punish them or attempt to extinguish them.

It is important to note that the characteristics that may be problematic in childhood are the very ones that we want and expect our creative adults to possess and demonstrate. The problems arise primarily because (a) these children do not fit our expectations for children of that age, (b) they enter and pass through developmental and mental stages more quickly than our programs are designed to handle, and (c) due to lack of life experience, their judgement, wisdom and empathy lag significantly behind their intellect, creativity and intensity.

The Assessment

In interviews with the parents, as well as in the observations and formal testing discussed below, attention should be given to the child's behavior in the following areas.

- Cognitive/language abilities
- General motor ability
- Fine motor ability
- Interpersonal relations
- Persistence, intensity, concentration

Developmental schedules such as the Gesell Developmental Schedules (Ames, Gillespie, Haines, and Ilg, 1979) or even the widely used Denver Developmental Screening Test (Frankenburg, Dodds, Fandal, Kazuk and Cohrs, 1975; Fish and Burch, 1985) can be used to guide the conceptualization and provide norms for comparison, even though such developmental schedules were not specifically designed for the task of identifying gifted children. In general, gifted preschool children are about 30% more advanced developmentally than the norm, though wide variability exists (Brink, 1982). For example, the average child speaks three words (other than "MaMa" or "DaDa") at about fourteen months. Most gifted children achieve this milestone at about nine to ten months, though some gifted children will have accomplished this tasks as early as six months, and will be speaking in complete sentences of five to ten words (or more) the end of the first year (Fish, 1984). Gifted children above IQ of 150 begin reading on the average at four and one-half years, with some of these children starting to read at age two (Kincaid, 1969).

The first three areas - Cognitive Language, General Motor Ability, and Fine Motor Ability - can be assessed using a checklist such as that presented in Table 1. Generally, gifted children are advanced in all three areas, although the development is unlikely to be equal in all three areas. This table was developed by Hall and Skinner (1980) specifically for such use in parent interviews to assess whether a pre-school child might be gifted, and is based on information compiled from such sources as the Gesell Developmental Schedule and the Bayley Infant Scales. Children need not be advanced by 30% in all of the areas listed. Indeed, most gifted children are not equally advanced in all areas due to the developmental spurts and lags noted earlier. However, if a child is advanced by 30% or more in most of the items, particularly in cognitive/language, informational or mathematical skills areas (Jackson, 1980), then it is likely that the preschool child will later be categorized as gifted.

A pattern that is particularly frustrating to the child occurs in some gifted children when the General Motor or Fine Motor development lags significantly behind the cognitive development. In such situations the child can visualize a desired behavior, but is unable to accomplish the task due to poor motor skills.

Developmental Guideline For Identifying Gifted Preschoolers

General Motor Ability	Normal Months	30% More Advanced
Lift chin up when lying stomach down	1	0.7
Holds up both head and chest	2	1.4
Rolls over	3	2.1
Sits up with support	4	2.8
Sits alone	7	4.9
Stands with help	8	5.6
Stands holding on	9	6.3
Creeps	11	7.7
Stands alone well	11	7.7
Walks alone	12.5	8.75
Walks, creeping is discarded	15	10.5
Creeps up stairs	15	10.5
Walks up stairs	18	12.6
Seats self in chair	18	12.6
Turns pages of book	18	12.6
Walks down stairs one hand held	21	14.7
Walks up stairs hold rail	21	14.7
Runs well, no falling	24	16.8
Walks up and down stairs alone	24	16.8
Walks on tiptoe	30	21.0
Jumps with both feet	30	21.0
Alternates feet when walking up stairs	36	25.2
Jumps from bottom step	36	25.2
Rides tricycle using pedals	36	25.2
Skips on one foot only	48	33.6
Throws ball	48	33.6
Skips alternating feet	60	42.0

Fine Motor Ability	Normal Months	30% More Advanced
Grasps handle of spoon but lets go quickly	1	0.7
Vertical eye coordination	1	0.7
Plays with rattle	3	2.1

Manipulates a ball, is interested in detail	6	4.2
Pulls string adaptively	7	4.9
Shows hand preference	8	5.6
Holds object between fingers & thumb	9	6.3
Holds crayon adaptively	11	7.7
Pushes car alone	11	7.7
Scribbles spontaneously	13	9.1
Drawing imitates stroke	15	10.5
Folds paper once imitatively	21	14.7
Drawing imitates V stroke & circular stroke	24	16.8
Imitates V and H strokes	30	21.0
Imitates bridge with blocks	36	25.2
Draws person with two parts	48	33.6
Draws unmistakable person with body	60	42.0
Copies triangle	60	42.0
Draws person with neck, hands, clothes	72	50.4

Cognitive Language	Normal Months	30% More Advanced
Social smile at people	1.5	1.05
Vocalizes four times or more	1.6	1.12
Visually recognizes mother	2	1.4
Searches with eyes for sound	2.2	1.54
Vocalizes two different sounds	2.3	1.61
Vocalizes four different syllables	7	4.9
Says "da-da" or equivalent	7.9	5.53
Responds to name, no-no	9	6.3
Looks at pictures in book	10	7.0
Jabbers expressively	12	8.4
Imitrates works	12.5	8.75
Has speaking vocabulary of 3 words (other than da-da and ma-ma)	14	9.0
Has vocabulary 4-6 words including names	15	10.5
Points to one named body part	17	11.9
Names one object (What is this?)	17.8	12.46
Follows direction to put object in chair	17.8	12.46
Has vocabulary of 10 words	18	12.6
Has vocabulary of 20 words	21	14.7
Combines 2 or 3 words spontaneously	21	14.7
Jargon is discards, 3 word sentences	24	16.8
Uses I, me, you	24	16.8
Names 3 or more objects on a picture	24	16.8
Is able to identify 5 or more objects	24	16.8
Fives full name	30	21.0
Names 5 objects on a picture	30	21.0
Identifies 7 objects	30	21.0
Able to tell what various objects are used for	30	21.0
Counts (enumerates) objects to three	36	25.2
Identifies the sexes	36	25.2

Of the other two areas - interpersonal relations, and intensity, concentration and persistence - it appears that the interpersonal relations aspect is fairly similar to the Personal-social dimension on the Denver Developmental Screening Test, the Battelle Developmental Inventory (Newborg, Stock and Wnek, 1984) or other similar inventories. As with the earlier dimensions, the 30% advancement over average should be used with regard to the general interpersonal skills tapped by these instruments, such as the progression from parallel play to interactive play.

There are, however, some behavioral and interpersonal dimensions that should be examined which are not typically included in such standard assessment instruments. In particular, the aspects of intensity, concentration and persistence are seldom represented, though they have clearly been recognized as signs of advanced intelligence which appear quite early in life (Kolata, 1987; Webb, et al., 1982). Most often these characteristics can be estimated by a professional based on a parental report. Gifted preschool children typically have a broad range of interests, but also spend unusually long periods deeply involved in the project at hand, literally hours sometimes, and to the point that those around clearly recognize the difference from average.

An exception is the gifted child who is also suffering from attention-deficit disorder (ADD). These children show extremely high skill levels in various areas, have wide ranging interests, but have great difficulty with impulse control or in staying on task when distracting or competing stimuli are present. Since the presence or absence of an attention-deficit disorder is extremely important in the recommendations to follow, care should be taken to rule out this possibility if possible.

Whether the preschool gifted child has an attention-deficit disorder or not, one of the most universal characteristics among gifted children, and perhaps the most difficult to define, is intensity. Perhaps one mother's description of her child will suffice when she said, "My child's life motto seems to be 'anything worth doing, is worth doing to excess!" Indeed these children do seem to be excessive personalities, and their intensity permeates virtually everything they do from their behaviors to their emotions. It is as though they are overly intense in every respect, even in thinking and sleeping. As a result of the lack of modulation in the behaviors of gifted preschoolers, their emotional and interpersonal characteristics usually are distinctly florid and excessive, often to the point of causing problems for those around them.

In addition, to the above general guidelines, the following behavioral characteristics have been reported consistently by professionals and parents alike as being relatively unique characteristics of pre-school gifted children. Professionals should specifically inquire about them.

- Does the child use humor, particularly in riddles, incongruities, or puns?
- Does the child prefer older playmates?
- When playmates are not easily available, does the child create games with imaginary playmates?
- Does the child attempt to modify, improve on, create, or organize games being played with others?
- Does the child who is capable of interactive play spend substantial amounts of time in solitary play involving manipulating or creating objects?
- Does the child maintain unusually long periods of focused attention when involved in an area of interest?
- Does the child repeatedly seek complex tasks and challenges even though experiencing frustration?
- Does the child show unusually intense feelings (sensitivities) in areas such as the arts or regarding social inequities or moral dilemmas?
- Does the child experience keen impatience or frustration when peers do not share interests, or when others cannot seem to grasp solutions to problems?
- Does the child seem to need significantly less sleep or significantly more sleep than others?
- Does the child have a wide range of interests, such that there seem not to be enough hours in the day?

- Is the child highly competitive, and intensely dislikes losing?

If the answer to a majority of these questions is "yes," a strong likelihood exists that the child will fall in the gifted category. In addition to the above checklists and guidelines, a few other findings have appeared with greater frequency among gifted children and their families. They do not, however, usually appear to be of significant help in making clinical decisions, and are noted here only for completeness. Gifted children tend to have greater birth weights and head circumferences (Fish, Bilek, Horrobin and Change, 1976; Perigo-Moore, 1981). Mothers beyond age 40 appear more likely to have profoundly gifted children (Matheison, 1980). Boys with IQ scores above 140 appear to show significantly higher activity levels and more difficulties with impulse control than boys below IQ 140 (Shaywitz, Shaywitz, Jamner, Towle, and Barnes, 1986).

Observation: Where possible, the child should be observed and interacted with individually. Typically the behavioral characteristics noted above become quickly apparent when the child is asked to perform such tasks as drawing a picture, telling a story, constructing three wishes, or talking about family and daily activities. It is not helpful to ask children directly whether they think they might be gifted. Seldom are gifted children aware that the way they see and do things differs significantly from others. They have grown up seeing the world through their eyes, and to them that is "normal" or average. Instead, they often puzzlingly find themselves feeling out of step, but without being able to explain why others their age seem not to share their interests or skills. Thus, it is more appropriate to ask them about their activities and the quality of their interactions with peers, shared interests and games, etc.

Formal Observations: As noted previously, individually administered tests of intelligence or creativity are generally no more likely to be accurate than interview and observation, and the added professional time and expense of formal individual tests are probably not warranted until age six or so. The administration of group tests appears even less warranted due to their far lower reliability and validity (Sattler, 1986).

Some situations, however, warrant formal testing, particularly when a learning disability is suspected, or when there are limitations on the usefulness of interview or observation methods such as in children with speech, hearing, or motor difficulties that interfere. The professional should bear in mind, though, that the child's handicap itself may have made the testing situation more stressful, may have reduced the child's exposure to experiences that would have contributed to knowledge, or may hinder the child's ability to perceive or respond to the test instructions. "Thus, a handicapped child who earns the same score as a non-handicapped child may actually be demonstrating a more unusual performance and greater capacity for future learning." (Jackson, 1980). In such cases it is frequently necessary to adapt the standardized administration procedures so that the child can have a reasonable opportunity to demonstrate abilities and skills. Of course, this means that the professional will then have to use professional judgement in interpreting the meaning of scores since interpretation of the test scores according to the typical norms can no longer be done in straightforward fashion. Here the "best performance" model of Roedell, et al (1980) is particularly appropriate not only as a measure of potential, but also to identify areas of strength that can be built upon in educational planning.

In cases where a learning disability or developmental disabilities in motor development is suspected, tests such as the Beery Test of Visual-Motor Integration or the Bender Visual-Motor Gestalt Test may be helpful (Sattler, 1988). Typically these are used in conjunction with whatever portions are able to be used of an individual test of intelligence. Though these tests do not measure "giftedness" per se, they are relevant for many gifted children who can see in their "mind's eye" what they would like to do with a task, but their muscular coordination does not cooperate. Often this frustration mirrors similar experiences that the child has at home, or is likely to have at school, where the child's frustration culminates in temper tantrums that otherwise are inexplicable to the adults around.

An overall comment is needed about preschool gifted children suspected of being learning disabled. The professional should be extremely reluctant to diagnose a pre-school gifted child as being learning disabled unless the evidence is truly compelling. Instead, consideration should be given to the more likely phenomenon of a developmental lag. Gifted children, like others their age, do not develop smoothly across various skill areas. Indeed, the relative discrepancies are likely to be greater simply because the total potential range of their skills is too high. It is not unusual to find discrepancies between Verbal and Performance IQ scores of 20, 30 or even 40 IQ points. Among Scaled Scores, differences of five to seven points are not uncommon. Experience suggests that these variations most often reflect temporary developmental anomalies, rather than persistent characteristics. Although recommendations can still be made to parents about remediate efforts, caution should be exercised concerning giving a label of "learning disabled" to a gifted child under the age of seven.

Formal testing of gifted children often differs in other respects. Generally, testing takes longer since the children do not reach the ceiling as quickly as other children. Testing should be scheduled over two or even three occasions so an accurate measure of functioning can be obtained, since otherwise fatigue is quite likely to be a factor. In addition, the gifted child's playfulness and sense of humor may inhibit straightforward progression through the test, and some allowance must be made to adequately consider this both in administration and in interpreting the results. Paradoxically, self-evaluation and self-criticism by the gifted child is also more likely than in other children, and can hinder the testing because of the child's reluctance to guess. Even so, most gifted children find the experience of testing to be enjoyable, at least if it is presented as a fun set of challenges that will help the family to plan for school entrance. Most gifted children can readily comprehend such a description, and are already extremely anxious to enter school; they can hardly wait to get to the place that has the "rest of the answers." Thus testing can be construed to them in ways that they find to be in their own self-interest.

In the scoring and interpretation of tests, professionals must not confuse high intelligence with wisdom that comes from accumulation of life experiences. In gifted children, judgement lags significantly behind intellect (Roedell, 1980; Webb, et al., 1982), not because the child is not smart, but because there are many aspects of life that cannot be "reasoned out" and can only be understood through accumulation of various experiences. This lag in judgement is often quite frustrating to parents who begin to expect the child to "act" in keeping with his intelligence. Most often the social and interpersonal judgement is only slightly ahead of the child's chronological age, but yet is significantly lagging behind the child's "mental age."

Similarly, caution is particularly needed in interpreting "age equivalent" or "grade equivalent" scores that gifted children obtain on such tests as the Wide Range Achievement Test or the Peabody Individual Achievement Test. Sometimes tests such as these are used for "out of level" testing to obtain some estimate of a child's reading, spelling or arithmetic level, and are often used in making early entrance or grade placement decisions. Such an "out of level" testing is an appropriate approach, but caution must be exercised in interpreting what these scores mean. Certainly they do not necessarily indicate that the child is ready to enter a specific grade or that the child functions at that age level in all respects. The sampling in such tests is in specific domains only, and many other foundation skills that are taught in specific grades of school are not measured by these tests. Parents, in particular, often need to have this distinction made for them in order to allow them to plan appropriately.

Recommendations to Parents

Although the professional hopefully will want to learn more about gifted children and their families through reading and other continuing education activities, the following brief descriptions represent a distillation of insights gained from the author's decade of working with gifted children and their families. Further information, including bibliographies of books, magazines and journals, and names of relevant national associations, can be found in the appendices of such books as Webb, et al. (1982) and Clark (1988).

In reviewing assessment results with parents of gifted children, the professional should expect that the parents initially will be uncomfortable since most often they expect that you - as the professional- will have found something that they did wrong as parents. Although parents of preschoolers generally may be somewhat insecure, the parents of gifted preschoolers typically are more so, since they characteristically come to the professional because they are puzzled by the child's behavior. In addition, as noted previously, most parents of gifted children already have acquired a history of negative interactions with others who have accused them of bragging or overstating their child's abilities. Expect these parents also to be frustrated with many aspects of their gifted child, whose intensity (combined with the other characteristics noted previously) have caused at least one mother to say, "Having a gifted child doesn't change the family's lifestyle; it destroys it!"

Parents of such children are typically overjoyed and grateful to discover a professional who is willing to listen to them, to take their situation seriously, and to help them plan for the future. Some parents will worry that being gifted inevitably will lead to emotional problems. It is important for the professional to assure them that such is not the case, particularly when gifted children are understood and supported by parents and school systems. Thus, the interactions with the psychologist or other professional should be cast in the light of enhancing human potential and preventing potential difficulties, rather than being viewed from a psychopathology model. Parents find this approach reassuring, though they usually are less pleased to discover that insurance reimbursement seldom covers such professional services unless there is a co-existing or derivative problem, such as anxiety or depression.

Most parents soon bring up questions which revolve around providing enrichment activities, questions of early entrance to school, finding the "right" school, peer relationships, sibling rivalry, developing impulse control and self-management skills. Some of these questions can be answered simply. Others require more detailed information and extended effort by the parents and the child.

Enrichment should follow the child's lead, rather than forcing development on the child. Give the child a broad array of stimulating experiences, and provide more in-depth exposure when the child expresses interest. Museums, libraries, zoos, trips to junk yards - all can be exciting wonderlands for gifted pre-school children. It is important to help parents understand when a child might be through with an activity. That is, parents of gifted children often feel that a child should carry all activities through to completion in order to learn responsibility. However, for gifted children, particularly preschoolers, the complexity of the task undertaken and/or the diversity of interests of the child may preclude the child from reasonably completing it, though the child may have learned much that is stimulating in the process. Parenthetically, yet another characteristic of gifted children is that they often set unrealistic goals since their imagination is so great, only to experience keen disappointment if they find that their goals cannot be met.

Early entrance to school is a consideration since most gifted youngsters do better with such an approach, as contrasted with situations where they feel chronically bored and unchallenged in schools if the curriculum is inflexibly lock-step (Webb, 1982). Such a decision must involve consideration not only of the child's intelligence and achievement in academic areas, but also sociological variables. If the community is one with a preponderance of gifted children in the school system, then it is likely that the child will be able to find suitable support and enrichment without early admission. Of course, this is not as likely to be true for profoundly gifted children who generally seem to do well with one year's advanced placement. Occasionally, radically advanced placement of two or more years is warranted, but only after considerable study of the individual situation, only if the family is high informed and supportive, and only after attempts have been made at less radical solutions.

Given our society's present sex-role expectancies, boys probably should be in the upper 50% of the growth chart before early entrance to school is seriously consid-

ered. In some school systems, and in many school readiness schemes, adequate fine-motor coordination is likewise considered a necessity for early entrance. Usually this is operationally defined through such tasks as the ability to tie one's shoes, to use scissors, or to color and stay within the lines. With gifted youngsters, the lack of these skills is not an adequate reason to deny early entrance, since gifted children quickly learn compensatory ways to work around these temporary deficits which are not barriers to learning. Parents of preschool gifted children should be encouraged to approach the school system at least a few months prior to the child entering kindergarten, or as much as a year before the child enters first grade. The contact initially should be with the coordinator of gifted education programs for that school system, or perhaps with the principal. Parents commonly report that if they initially contact the regular classroom teacher, they are quite often met with open or implied disbelief, or at least a reserved "wait and see" attitude.

Encourage the parents to give you permission to send a report of your findings to the school. Having a professional's opinion that the child may be intellectually or creatively gifted assists the school personnel in giving more serious consideration to the possibility that this child may be one who is different from the average child for whom uniform school systems in the United States have special differentiated educational programs for gifted children only beginning in the third grade (and then usually only for a few hours per week), modifications can be made within the regular classroom setting even in the first school years to nurture and develop intellectual abilities as well as the child's sense of integrity and self-concept. It is important for the parents to develop an alliance with the school, and that they be seen by school personnel as helpful, rather than as complaining adversaries. More information on how to do this along with information concerning what expectancies parents and schools should have of each other, can be found in such resources as Webb, et al. (1982) and Clark (1988).

Particular support of the parents by professionals is needed if the preschool gifted child is female or is from a cultural minority or disadvantaged setting. Socialization factors begin quite early in life to shape family and self attitudes concerning the acceptability of creative and intellectual behaviors. Gifted girls learn quite early that they should camouflage their brightness, and should lower their overt aspirations (Kerr, 1985). Cultural minority and disadvantaged gifted pre-schoolers often find themselves confronted with lowered, often prejudicial, expectancies about their abilities, and may belong to sub-cultures that place far less value on intellect and creativity (Colangelo and Zaffran, 1979). Counseling with parents can be of particular help in both instances since these gifted pre-schoolers are far more likely to differ from the norm in ways that will become increasingly obvious as they mature, and which can result in emotional and interpersonal difficulties unless the differences are anticipated.

At home, it is important that the parents not be so awed by their preschool gifted child that they allow the child to rule the family or become the virtual exclusive focus. Similarly, on the other hand they must not allow a gifted child to become a liability rather than an asset through overly controlling, limit-setting or criticizing gifted child behaviors so that the child feels unaccepted and unacceptable.

Persons who are awed often fall into the trap of treating the gifted child like a "walking head." These persons, in their interactions with a gifted preschool child, often are so struck by the child's precocity that they comment quite openly about it, whether visiting relatives or in a grocery check-out line. Such reinforcement of the child's intellectual, creative or artistic skills may be pleasing to the child of the parents, but runs the risk of having undue attention placed on what the child can do. Such children are at risk for subsequently feeling that they can be of value only if they are producing something, and that they cannot be valued simply for themselves. Not only is it hazardous to hang one's sense of identity on a single hook (i.e., intellect), but also such a singular focus interferes with the child's ability to relate to others.

With gifted children, as with all children limits on behaviors are needed. However, because of the gifted child's intensity and creativity, and because the child is so often "out of step" with age peers and the systems and expectancies for children of that age, the likelihood is increased that the child will be criticized for many of the very behaviors that are inherently a part of being gifted. It is extremely easy for parents to become engaged in power struggles that serve only to create distance between parent and child. An example would be the gifted child who needs only six hours sleep at age five, or the four-year-old who asks incessant questions of everyone around. Instead of attempting to stifle such behaviors - at the expense of one's relationship with the child - it is more beneficial to recognize that these behaviors are to be expected in many gifted preschool children. An important motto to impart to parents is that of "flowing with, rather than fighting against." Though it is important to shape and mold the behaviors, most need not become the sources of power struggles or criticisms of the child's intensity, creativity and curiosity. Later in life these children will encounter more than their share of persons who feel a need to "take them down a peg" or to "show them they're not as smart as others say they are."

Limits set on gifted preschool children generally should be as few as possible, but should be consistent in their enforcement. Our experience has been that the natural or logical consequences approach of Dreikurs and Soltz (1964) works particularly well with most gifted pre-school children, and their book is one which we recommend to these parents, along with "Guiding the Gifted Child" (Webb, et al. 1982). The exception is for the attention-deficit disordered gifted child. There, limits are needed that are frequent, tightly enforced, and which involve close monitoring of all aspects of the child's behavior. These children give the appearance of incredible cunning in violating house rules, and appear almost immune to usual reinforcement schedules since they habituate so quickly to new discipline approaches.

For most gifted preschoolers, however, positive reinforcement is quite effective, and can be used to ameliorate or prevent several common problems that otherwise may occur. Because gifted preschoolers often have such wide interests, they may have great difficulty staying "on task." Since this is an area of importance to

school personnel, parents should use successive rewarding of small increments to promote this skill.

Similarly, cooperative, rather than competitive play, can be reinforced. Though such a comment might seem applicable to all pre-schoolers, the intense orientation toward mastery within most gifted pre-schoolers orients them disproportionately toward games and activities that are competitive and where they can "win." Needless to say, this does not always make for the most harmonious sibling or peer relationships, and will need focused attention by the parents to help the child develop alternate styles of interacting. Role-modeling by the parents of cooperative and non-competitive activities is particularly helpful, as is role-playing with the child to help develop empathy for another's viewpoint.

A related and very powerful technique is that of "special time," wherein the parent gives each child in the family five minutes of undivided attention to jointly do what the child wants to do, except it cannot be a competitive activity. Such special times give opportunity for the child to experience sharing and cooperative ventures, while removing competitive ones. This, and other related techniques, are described in more detail in Webb, et al. (1982).

Finally, the professional will encounter some parents who believe their preschool child is gifted when, in fact, this is not the case even when using a "best performance" approach. Most often this occurs in children who are above average in intelligence, usually with IQ scores of 120 to 125. Many of these parents initially ardently desire for their child to be formally designated as "gifted," and may refuse to believe the professional who attempts to tell them otherwise. A helpful approach in such situations is to suggest that the child may fall in the range of "optimum intelligence," though not at this time in the range called "gifted." The concept of optimum intelligence (in IQ terms about 120 to 145) was formulated by Hollingworth (1975) to represent that intelligence level where tasks are mastered easily, but where one is not so different from society's mainstream as to have an increased risk of being noticeably different. It is from this group that most of the leaders in our culture come from, and clearly is sufficient general intelligence to comfortably complete college level academic work, or beyond, yet still have a sense of belongingness to those around. Upon understanding this, most such parents are both satisfied and relieved.

Most of all, suggest to parents of apparently gifted preschoolers, that they treat their children as though they were gifted, at least until such time as more reliable and accurate estimates can be obtained, usually when the child is about age eight or nine. Encourage them to talk to other parents, to join local discussion groups, to share child-rearing recipes and parenting experiences, and to read the literature on gifted and talented children. If their child subsequently turns out to be gifted, this approach will have helped significantly. If not, it will have done no harm, and the additional information they have gained will have prevented them from placing inappropriate expectations on their child in later years.

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Batelle Developmental Inventory
Bayley Scales of Infant Development
Beery Test of Visual-Motor Integration
Bender Visual-Motor Gestalt Test
Denver Developmental Schedules
Kaufman Assessment Battery for Children
McCarthy Scales of Children's Abilities
Peabody Individual Achievement Test
Peabody Picture Vocabulary Test - Revised
Slosson Intelligence Test
Raven Progressive Matrices
Stanford-Binet Intelligence Scale, Fourth Edition
Stanford-Binet Intelligence Scale, Form L-M
Torrance Tests of Creative Thinking

Wallach and Kogan Creativity Battery
Wechsler Intelligence Scale for Children - Revised
Wechsler Preschool and Primary Scale of Intelligence
Wide Range Achievement Test
Woodcock-Johnson Psycho-Educational Battery

EARLY ASSESSMENT OF EXCEPTIONAL POTENTIAL

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Introduction

The past decade has been one in which the issue of equity has been prominent in the reform of American schools. This concern has affected gifted as well as general education. The National Report on Identification (Richert, Alvino & McDonnel, 1982) revealed that culturally different and economically disadvantaged students were underrepresented from 30-70% in gifted programs throughout the country. Furthermore, nationally based research (Cox, 1985) on service delivery models used across the country to meet the needs of intellectually gifted students have shown programs to be extremely uneven in scope and depth, and centered on upper elementary grades four to eight.

These issues have formed the background for new federal legislation, the Jacob Javits Gifted and Talented Students Education Act of 1988, which has been authorized to support research on innovative ways to equalize opportunities for underserved culturally different and economically disadvantaged gifted students. Beginning in 1989, some twenty-five national projects were funded under the auspices of the Act. The purpose of this article is to describe one such effort on behalf of young children from culturally different and/or economically disadvantaged settings.

Early Assessment for Exceptional Potential

The Early Assessment for Exceptional Potential (EAEP) project (Shaklee, Whitmore, Barbour, Barton, Ambrose & Viechnicki, 1989) was designed to create and implement a non-traditional model for the assessment of exceptional potential in young children, particularly those who might be overlooked by standardized testing. The university-based team began with a set of assumptions about young children and their teachers: (1) the regular classroom setting should be the focus of the assessment effort; (2) primary classroom teachers are professionally competent individuals who can make decisions about children; (3) indicators of exceptional potential are universal in nature; (4) a systematic, continuous system of observation can be used to make decisions about children and subsequently, curricular change; and, (5) an evaluation model can be created to determine the impact of the project on teachers and students.

The project was initiated in Fall 1989, when the Collaborative Assessment Council(CAC) was created. The Council consisted of university based faculty from gifted child education, early childhood education and evaluation; primary regular and gifted child classroom teachers; and administrators and curriculum coordinators from five local school systems. The CAC functioned as the decision making authority for the project. During the first year of the project, the CAC established three subcommittees which completed the following tasks: a) a research-based list of universal primary identifiers of exceptional intellectual potential with operational descriptions; b) a needs assessment of regular primary classroom teacher's knowledge and comfort with gifted assessment and education; and c) a portfolio assessment process for collecting and evaluating observational and self-report data from teachers, children and parents.

Preparation of the primary classroom teachers who were to implement the assessment model became a focal point of the discussions in the CAC. Reviewing earlier research on staff development, the Council focused its efforts on creating a design that would immerse the teachers in the goals and objectives of the project, prepare them to use the portfolio process and build ownership in the Early Assessment program. One of the key training questions revolved around our ability to show teachers authentic examples of young children demonstrating examples of the primary identifiers (i.e., How can teachers be shown examples of young children exhibiting primary identifiers of exceptional potential?)

Authentic Examples

In order to provide authentic examples of the primary identifiers, the CAC decided to create a series of videotapes for primary classroom teachers. Six classrooms of identified intellectually gifted students representing grades K-3 were videotaped once a week from October 1989 through March 1990. These classrooms were selected because they represented similar populations in age, grade level, culture, ethnic origin,

socio-economic status and type of giftedness (i.e., intellectual) to the EAEP target population. Forty-five hours of videotape footage were coded and analyzed in relation to the primary identifiers using a computer program, ViData (Zuckerman,1990). Inter-rater reliability was established at .81 and intra-rater reliability at .94. The computer analysis yielded 457 examples of the 18 primary identifiers. A secondary screening of the samples based on accuracy of representation, cultural/ethnic bias, and auditory/visual clarity was conducted by five external reviewers. The final examples of the primary identifiers were used to create four instructional videotapes that reflected the categories of identifiers: exceptional learner of knowledge; exceptional user of knowledge; exceptional generator of knowledge; and, exceptional motivation.

Portfolio Assessment

During the same period the portfolio assessment process was created and piloted with fifteen primary classroom teachers. This model was based on using developmentally appropriate (National Association for the Education of Young Children (NAEYC), 1986), observations of children in their own classroom. In addition to helping circumvent the cultural bias which may be inherent in particular tests, the observational approach has been endorsed by NAEYC (1986) as being more developmentally appropriate and possibly more representative than a one-time evaluation provided by an unfamiliar examiner. Gifted educators (Eby & Smutny, 1990; Karnes, 1983; Kitano, 1985; Whitmore, 1980); developmental psychologists (Feldman, 1980; Gardner, 1983) concerned with young children; and researchers on culturally diverse populations (Frasier, 1991) have also used and endorsed observational approach to assess children's ability.

The Portfolio Assessment Process (Shaklee, Barbour & Rohrer, 1991) which emerged combines the use of observational strategies with multiple data sources in an ongoing assessment structure. Teachers collect six types of evidence from four audiences (i.e., parent/community members, teachers, student and peers) over a six-week time frame. The evidence includes: (a) anecdotal records that recorded a minimum of one child per week; (b) observations of class members during six sample lessons which are selected to elicit evidence of exceptional potential; (c) a peer/self nomination questionnaire; (d) a home-community survey; and (e) examples of products produced by the child which can be selected by the child, teacher(s) and/or parent. The portfolio is collected and used for all children in the primary classroom. Teachers are guided in assessing the evidence of exceptional potential, and a profile of student strengths emerges from the data. Based on individual/group profiles teachers are assisted in making adaptations and modifications in the primary curriculum and environment which will support the development of student potential.

Staff Development - Primary Teacher Institute

A two-week Primary Teacher Institute was used to prepare 40 primary classroom teachers for the implementation of the program. Designed to reflect the kind of developmentally appropriate inquiry learning they should promote in their classrooms, teachers were actively involved in discussion, reflection, guided practice, simulation and other activities during their stay at Kent State University. The topics encompassed the key elements of the project: exceptional potential; culturally diverse populations; observational analysis; portfolio assessment; modifications in curricula and environment; and creating a support structure for implementation (i.e., teacher cohorts).

Impact and Evaluation

Multiple methods of evaluation (i.e., structured and open-ended interviews, journals, classroom observations, four school year staff development sessions, and post assessment using videotape examples) have been used to document the impact and effectiveness of the Early Assessment project. The ultimate impact of this project is a longitudinal question. However, information to date indicates substantive changes in the perception of primary classroom teachers toward their students. Although multiple sources of data are being collected, some of the most powerful statements are found in the language of the teachers themselves when discussing the Portfolio Assessment Process.

During in-depth interviews, primary classroom teachers indicated that this model, based on the strengths of children, created a new paradigm from within which to view individual children. Some students with behavioral problems were seen in a new light, as teachers began to perceive divergence and non-conformity as positive characteristics which could be fostered through more appropriate channels. The need to keep weekly anecdotal records on each child motivated some teachers to question the "invisible" children in depth, thus encouraging students to share motives and feelings which they had not previously shared. As one teacher said, "When I was forced to write down comments, I realized the breadth of the child's abilities." Collecting products gave teachers a way to pass on information to the next year's teacher: "The purpose is to prevent little Williams from being lost. If I can show the (next year's) teacher products, that will help."

Teachers were often surprised at the congruence of the peer nomination forms with their own perceptions of students within the class. Furthermore, the teachers began to appreciate the parent perspective of their child, noting the objectivity that the majority of parents used when describing their children, "They (the parents) were surprisingly honest; they didn't try to mark their child with the top notations all the way down the questionnaire."

One of the benefits for the project members has been to work with a group of professional, candid teachers. In their interviews as well as during the Primary Teacher Institute, the teachers acknowledged that using portfolio assessment procedures was "a lot of work" but "worth it." There was universal agreement that the portfolios provided a wealth of information for everyday use as well as the creation of profiles of exceptional potential. The teachers also noted that in some cases being a part of EAEP gave them "permission" to modify curriculum and environment. Their participation in EAEP enriched their array of learning alternatives to offer to students. We are fortunate to be working with a group of committed, motivated primary educators.

Summary

It appears from the "work in progress" that the issues previously identified in both early childhood assessment and gifted child education can be addressed by systematic long-term preparation of primary classroom teachers. Key elements of the successful use of the portfolio process for the identification of exceptional potential in young minority and/or economically disadvantaged students are being identified by the Early Assessment project. To date we have come to the following conclusions: 1) the universal identifiers of exceptional potential can be categorized and operationalized in a meaningful way with the use of videotape examples; 2) there are workable strategies for alternative assessment procedures in the early childhood classroom; 3) the assessment of exceptional potential which includes the entire classroom rather than a particular target group is more likely to alleviate the problems of underrepresentation and underservice; and 4) primary classroom teachers must have a "voice" in the creation and implementation of the process.

The "voice" of our primary classroom teachers has been instrumental to the success of the program. In the upcoming years we will have the opportunity to work with some 80 classroom teachers and over 2,000 primary children. The following years of the project will document the long term impact and effectiveness of this particular plan for the identification of exceptional potential. To date we are pleased with the progress of the Early Assessment project. Only time will tell if it has made a difference in the lives of teachers and children.

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TEACHER ASSESSMENT OF PRESCHOOL AND PRIMARY GIFTEDNESS

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Introduction

The study of gifted preschool and/or primary children is beginning to attract the attention of educators. Until recently the major emphasis of professional journals has been directed toward identification and programming for the gifted school age child - generally those in third grade or higher. Giftedness among preschool age children has been a low priority for educators for several possible reasons. The selection and application of appropriate instruments for identification was, and is, very difficult, as well as the fact that there have not been large numbers of preschoolers in educational programs.

However, social changes in the last several years, including the increased number of working parents and single parent families, have increased opportunities for formal education for many more preschool children. In addition, early intervention with various high risk preschool populations in the last 20 years has provided documentation that early intervention does improve

social, physical, and cognitive skills of preschoolers. This trend, capped by the passage of PL 99-457, has helped accelerate interest in provisions for meeting the needs of gifted children at the preschool and early primary level.

The movement toward recognition of and early intervention with gifted young children has been based on three issues. First, there is a growing recognition that current options at the preschool and primary level may not serve the needs of the gifted population, and may, indeed, result in the underdevelopment of potential ability (Whitmore, 1979; Davis & Rimm, 1988). Second, the lack of adequate programs for young children may have had the greatest impact on economically disadvantaged children who are deprived of a wide array of options available to middle and upper-class students (Southern & Spicker, in press). Third, evidence has begun to accumulate that appropriate curriculum opportunities can benefit all children in the preschool or primary setting. Parke & Ness (1988) have recently pointed out the importance of these early years for gifted children and the necessity of having a curriculum planned specifically for them. Karnes & Johnson (1987) found that providing a special training program for Head Start teachers and youngsters, thought to be gifted, helped all of the children in the program make academic and social gains. After identifying strengths of the children, the teachers were taught specific ways to encourage thinking and problem solving skills. With few programs available specifically for gifted preschoolers, this finding has strong implications for all programs for young children. The current understanding and emphasis towards a developmentally appropriate curriculum by leading professionals such as David Elkind and by professional organizations concerned with young children (e.g. NAEYC) clearly reinforces this finding for all children, including our very brightest.

Current Identification Practice with Young Children

Studies on identification of young gifted children have generally concentrated on the cognitive traits that are believed to be indicative of this population. Intelligence tests like the Stanford-Binet or the Wechsler Scales are most often used to identify students for early intervention programs (Kitano & Delon, 1988). These measures are, however, expensive and time consuming. Moreover, the reliability and long term validity of IQ tests for young children is questionable (Tannenbaum, 1983). Critics have also pointed out the potential shortcomings of these measures in the identification of other facets of giftedness (e.g. Sternberg, 1981; Gardner, 1982).

Studies that examine areas of potential giftedness or talent other than cognitive are rare and report diverse and contradictory results (Lupkowski, 1989). The appearance of potential talent in the visual or performing arts, leadership or creativity has been studied infrequently with this age group. Some theorists have expressed pessimism about identification of areas such as visual arts in early childhood (Clark & Zimmerman, 1984) because the lack of appropriate aptitude and achievement measures for this population preclude all but the most precocious children. Robinson, Roedell, and Jackson (1978) have reported that some early assessment of talent and interest can be accomplished with very young children (as early as one year old in some cases). Their sample was, however, very precocious, as measured by traditional ability measures (e.g. Stanford-Binet). Such a selection procedure reflects a circumscribed view of giftedness, and the applicability to other populations of gifted children must be questioned.

In addition, this research, as well as many other studies that describe characteristics of gifted young children, suffer from a glitch in methodology. Conclusions from these studies are derived from intact groups already identified as gifted. Characteristics derived this way may arise from the method of selection rather than from the inherent traits of giftedness. For example, there is ample evidence that reliance on standardized testing results in identification of a large population of economically advantaged students. Any traits generalized from this group may, thus, result from SES rather than innate ability. One even larger concern must be that these young children with only 3-5 years of experience are being "tested" to determine giftedness. We must use a variety of methods to understand these early abilities and not rely on a method that has been developed to look at skills of older and more experienced children.

Alternate Identification Sources

If recognition and programming for more varied traits of giftedness and talents among young children is to continue, other instruments and procedures will be necessary. One potential source for this information is to involve parents in the identification procedure.

Parents have the most extensive contact with young children, and may have a wealth of anecdotal information valuable in identifying children's abilities (Silverman, 1986). Haensly (1988) also found that parents are quite accurate in observing and reporting the abilities of their children. However, parents generally are not able to provide information about the relative performance of their children. Because of this, they frequently do not make the same interpretations of the characteristics and traits listed on many rating lists. What is meant by a long attention span? What is an advanced vocabulary? Or what exactly is implied by early reading ability? Even something as basic as the age at which a child learns to talk can be interpreted in different ways. Does talking mean saying one word, or does it mean using sentences? A trained teacher will be able to incorporate these anecdotes into information helpful in determining giftedness potential and can then help parents to understand how to help their child further develop all kinds of talents and abilities.

Teachers

If the pattern established with older populations is followed, much of the responsibility for screening and rating performances of young children will fall on teachers working with these students in the classroom. Many districts and preschools will turn to staff members to provide information about the performances of young children. Although the technical validity of teacher ratings has been brought into question (Pegnatto &

Birch, 1959; Gear, 1976), most gifted programs solicit information from teachers (Richert, Alvino, & McDonnel, 1982). Indeed, support for use of teacher ratings recently has been growing. Gear (1978) described empirical results indicating that specially trained teachers could reliably identify students with high individual IQs. Renzulli and Delcourt (1986) questioned conclusions advanced by critics of teacher accuracy. In most of the studies that indicted teachers' ability to identify gifted children, individual IQ scores were used as the criterion for successful identification. However, if a wider, multifaceted view of giftedness is adopted, it is also possible that teachers recognize abilities not assessed by the IQ test, especially when aided by parental input. In such instances, teachers could provide valuable information about students that goes undetected by traditional cognitive measures.

Sources of Validity and Reliability Errors in Teacher Nomination

Generally, efforts to solicit teacher input involve checklists or rating scales used in assessing students. These lists, developed from research with older populations, might be inappropriate if applied unchanged to preschool children. Although a number of researchers in gifted education have developed checklists tailored to the early childhood population (Karnes, 1978; Schwedel & Stoneburner, 1978; Kitano & Kirby, 1986), these lists are often used by teachers and parents who define the characteristics in many different ways.

When a teacher applies the checklists to various students, there is often a history of both positive and negative performance that has shaped the teacher's judgement about that student. To date, any information available about teacher judgement has come primarily from studies of teacher judgement with older populations, but it is possible to speculate that some of the same types of errors might occur.

One source of error in teacher nomination arises from presuppositions about what behaviors might predict potential giftedness. These assumptions may conflict with existing research literature about characteristics of gifted children in general and young gifted children in particular (Richert, Alvino & McDonnell, 1982). There are a large number of myths about what constitutes giftedness prevalent among educators, including the view that precocity is an essential prerequisite for future gifted performance; that all gifted students are highly verbal; or that gifted children universally exhibit extended attention spans (Richert et al. 1982). The extent to which teachers involved in identification and assessment adhere to these myths can reduce the validity of their ratings, especially in relation to young children, whose thinking, physical development, and social skills are qualitatively very different from the older students.

Teachers may also be swayed negatively by traits exhibited by some gifted children. Richert et al. (1982) lists eight behaviors associated with giftedness that are viewed as highly undesirable by teachers. For example, creatively gifted students may be disorganized, may appear off task, and may question traditional values. Resistance to authority and resistance to classroom exercises that are not viewed by the student as meaningful have been associated with students with high cognitive ability. Confronted with these characteristics, a teacher might resist assessing such a child as gifted. These types of errors may be even more harmful or misleading when made with young children, because these very behaviors often seen as negative are very normal and positive behaviors for preschoolers.

The experience of the teacher in the classroom, and with the age group being rated, may have an impact on the quality of the resulting assessment. Hanninen (1988) reported that differences between experienced and novice teachers in older grades were obtained with experienced teachers performing more effectively in identifying gifted children. Support for results of prior studies that linked training in gifted education with increased accuracy for teacher nomination was also reported (Gear, 1978). In addition, it might be inferred that lack of experience might also include lack of experience in the age group currently being assessed. Because of differences in behaviors of very young children from those of older students, extensive experience with upper grade students may not be relevant for assessing younger students and perhaps may actually encourage misidentification.

The differences in the demands of various settings in which children operate, and the varying behaviors they exhibit may cause further difficulty for teachers assessing giftedness. Preschool teachers may, and probably should, look for widely different performances to judge student potential than do teachers at the elementary level. Substantial differences would require that rating and observation instruments be sensitive to the age grade level being assessed.

A related issue arises in examining whether there are traits that are viewed as so important that they are prerequisites to identification. Little is known about the relative importance teachers assign to individual characteristics. Lists of characteristics often are quite lengthy, and they may include traits related to several areas of giftedness. If teachers view some characteristics as necessary characteristics of giftedness, the remainder of the characteristics might be examined and rated less carefully. The result could be that the identification becomes skewed to certain types of giftedness, or even biased toward characteristics that are not highly related to ability in some performance areas.

Even when teachers are trained, the validity of the results, especially for young children, must be measured by the extent and frequency of purposeful observations of behavior. Single observation settings may not provide an accurate description of student abilities. Very young children are in a period of rapid growth and development. Skills and abilities may not appear consistently or in narrow periods of observation. Unless screening for behaviors and traits is conducted continuously, over large spans of time and by individuals who have a close relationship with the child, it is possible that key behaviors may be missed.

Goals of the Study

The present study was designed to begin answering the question regarding what teachers recognize as advanced behavior in young children. Teachers of preschool, kindergarten, first, and second grades were sent questionnaires to discover not only the areas that they see as indications of advanced understanding, but also

to see if the areas that they identify vary from grade level to grade level. There have been studies showing that training teachers to encourage thinking skills does improve scores earned by disadvantaged children (Karnes & Johnson, 1987). Might this also be true for training gifted children at the preschool/primary level? Do teachers working with gifted preschool children have consistent definitions of gifted behaviors? To what extent do teachers' perceptions reveal accurate information about characteristics of young children that are highly related to later giftedness? Is this awareness due more to the experience or due to training and education? The present study will begin to answer these questions by first looking at preschool through second grade teachers' perceptions of giftedness and then examine these perceptions to see if there are differences related to experience or grade level taught.

Subjects

One hundred fifty-six teachers working with preschool, kindergarten, first, or second grade students in Northwest Ohio and Virginia were selected because of their previous association with education programs for young children. Sixty-six (43.3 percent) teachers responded to the questionnaire.

Each subject was mailed a survey and asked to respond to a series of 56 Likert scale questions. Items for the scale consisted of characteristics, traits, and behaviors frequently associated with gifted children derived from several widely used checklists (e.g. Renzulli et al., 1976; Clark, 1983) for older gifted children. The traits and behaviors were modified to apply to younger children (e.g., "reads a great deal; usually prefers adult books" was altered to "reads well and was self taught"). Some characteristics were included that have low to zero level correlation to giftedness or later achievement, (e.g., "is neat"; "always follows directions"; Richert et al., 1982). Respondents were assessed at the end of the questionnaire to list: (a) the three characteristics they thought most indicative of giftedness, (b) the three traits least indicative of giftedness and (c) traits not mentioned that they felt were important. Teachers were asked to report on the level at which they were currently employed, other levels at which they had worked, years of experience in current and other placements, and educational level achieved (including area studied).

Results

Item responses were analyzed and a reliability estimate for the scale was generated (Cronbach alpha =.837). Teacher responses were scored and analyzed. Questions that had the highest (very important) and lowest (least important) item means are presented in Table 1. The most frequently occurring, open-ended responses as to which of the items were most and least important in diagnosing a bright or talented child, are presented in Table 2.

The 56 items of the scale were grouped into a series of categories: a) Cognitive Traits, b) Personality Traits, c) Physical Traits, d) Creativity Traits, e) Talent Area Traits, and f) Social Traits. Responses to these categories are presented in Table 3. In addition, responses by teachers were compared in these six areas using two-tailed t-tests on the basis of current grade taught, years of experience at that grade, and whether or not the respondent had a degree in early childhood education. Significant differences were noted for years of experience in responding to personality (t= 2.184, p=.05) and social traits (t=2.624, p=.02g); for current grade taught, significance was approached on physical traits (t=-1.981, p=.052). No significant differences were noted for a degree in early childhood. Comparison means, standard deviations, and t values for the Area comparisons are reported in Table 4.

Table 1

Highest and Lowest Item Means for Specific Questions

Items with Highest Means	*Means*
1. Understands abstract concepts	3.476
2. Has an ability to generate unusual comparisons and categorizations	3.444
3. Learning is exceptionally rapid	3.413
4. Possesses insight into cause and effect relations	3.365
5. Possesses a large storehouse of information	3.333
6. Chooses advanced or challenging activities and hobbies	3.323

Items with Lowest Means	*Means*
1. Hates physical activity	1.270
2. Is large for age	1.587
3. Is neat	1.603
4. Is rebellious	1.666
5. Is well liked by classmates	1.794
6. Prefers to sit and watch before engaging in games or activities	1.841
7. Seems to shift from interest to interest rapidly	1.857

The remaining item means were 1.905- 3.238

Table 2

Frequency Of Factors Labeled

Most Likely Indicators of Giftedness - Trait	*Frequency*	*% of Responders*
1. Understands abstract concepts	25	38
2. Learning is exceptionally rapid	14	21
3. Articulate and verbal	12	18
4. Is highly imaginative	10	15
5. Reads, and was self taught	9	14
6. Has an ability to generate unusual comparisons and categorizations	8	12
7. Possesses insight into cause and effect relations	8	12
8. Has diverse, frequently self-directed activities	7	11
9. Is curious	7	11
10. Advanced vocabulary	7	11
11. Good memory	6	9
12. Risk taker	3	4
13. Writes and tells stories	3	4
14. Long attention span	3	4
15. Solves difficult puzzles	3	4
16. Responds to emotional need of peers	17	26
Other responses (given 2 or fewer times)	17	26
TOTAL	145	

note: not all respondents chose 3 factors

Least Likely Indicators of Giftedness - Trait	*Frequency*	*% of 66 Respondents*
1. Is large for age	24	36
2. Is rebellious	15	23
3. Is well liked by classmates	14	21
4. Hates physical activity	14	21
5. Is neat	12	18
6. Shifts from interest to interest	7	11
7. Refuses to follow directions	7	11
8. Can count to 10	5	8
9. Sense of humor	5	8
10. Likes art and music	5	8
11. Plays an instrument	4	6
12. Overly sensitive	4	6
13. Sits and watches before doing	4	6
14. Self criticism	3	4
15. Good memory	3	4
16. Has advanced gross motor development	3	4
Other responses (given 2 or fewer times)	14	21
TOTAL 143		

note: not all respondents chose 3 factors

Table 3

Means for Area Trait Scores

	STANDARD DEVIATION	N	MEAN
Cognitive	.321	63	3.012
Social	.443	63	2.362
Personality	.385	63	2.367
Talent Area	.458	63	2.529
Physical	.399	63	1.837
Creativity	.513	63	3.006

Table 4

Differences on Trait Rating

	N	MEAN	SD	T	ALPHA
PHYSICAL TRAITS					
Current Grade				-1.981	p=.052
Teaching PreK - K	33	1.742	.417		
Primary	33	1.939	.390		
Years Experience				1.422	p=.136
< 5	19	1.96	.451		
> 5	47	1.79	.391		
COGNITIVE					
Current Grade				-1.709	p=.092
PreK - K	33	2.94	.336		
Primary	33	3.08	.292		
Years Experience				1.86	p=.124
< 5	19	3.11	.225		
> 5	17	2.97	.345		
SOCIAL					
Current Grade				-1.424	p=.673
PreK - K	33	2.357	.564		
Primary	33	2.408	.406		
Years Experience				2.624	p=.012
< 5	19	2.593	.369		
> 5	47	2.298	.508		
PERSONALITY TRAITS					
Current Grade				-1.048	p=.299
PreK - K	33	2.317	.412		
Primary	33	2.418	.368		
Years Experience				2.184	p=.050
< 5	19	2.514	.325	2.185	
> 5	47	2.307	.402		
TALENT					
Current Year				-.891	p=.376
PreK - K	33	2.494	.477		
Primary	33	2.595	.442		
Years Experience				.523	p=.552
< 5	19	2.598	.567		
> 5	47	2.523	.412		
CREATIVITY					
Current Year				-1.388	p=.170
PreK - K	33	2.909	.501		
Primary	33	3.085	.527		
Years Experience				1.044	p=.308
< 5	19	3.100	.504		
> 5	47	2.955	.523		

Discussion

Respondents tended to rate characteristics that have low association with giftedness or talent as the least likely indicators of giftedness. The lowest rated questions included physical size, neatness, and popularity. Overall ratings of physical factors were low. Cognitive traits were rated as more indicative of giftedness than any other group of traits, though they also seemed aware of traits that are often linked to creativity. Traits incidentally associated with creativity, such as rebelliousness or resistance to authority, were seldom seen as indicative of giftedness.

Many of the respondents seemed to identify as most likely indicators of giftedness those traits identified in the literature as indicators of cognitive giftedness in older children. When asked to choose the top three indicators, the three listed most frequently — understands abstract concepts, exceptional rapid learner, and articulate and verbal--are all cognitive variables that are highly valued in elementary and secondary classrooms.

Traits that have been associated with talents were not widely cited or highly rated by the respondents, though directions were included that specifically requested the respondents to consider characteristics that would point to musical or artistic abilities. Those gifted preschoolers who only demonstrated these traits would probably not be identified as gifted by these teachers. It is possible that such a diagnosis is difficult for this population of students. On the other hand, it may mean that teachers value cognitive abilities in school type settings more than visual and performing art abilities.

A number of affective traits, such as rebelliousness, oversensitivity and self-criticism, were included in the list of least likely indicators. Mention of any talent area (the only one identified was playing an instrument) was included more often in the least likely group than in the most likely group.

The unsureness of these teachers of young children in determining what gifted means can be seen in the number of traits listed in both the most and least likely groups. Ten traits were included in both lists.

It was surprising to find few differences for grade level taught, experience, and early childhood education. Teachers of preschool children are a bit less skeptical about the value of personality traits and social development than peers who teach primary age students. They are also a bit more negative about the value of physical development for such diagnoses.

Conclusion

The results of this survey can be viewed as an indication of the need to take a greater in-depth look at teacher perception regarding the components of gifted-

ness. In order to generalize the results, responses from greater number of teachers at each grade level representing a wider geographic background would need to be analyzed. However, the results obtained do provide some clues as to the state of the respondents' knowledge and attitudes toward characteristics that might trigger and/or decrease the likelihood of the identification of a student as gifted.

For the most part teachers of kindergarten and primary children are aware of the cognitive traits that the literature has shown to indicate giftedness. Contrariwise, these same teachers recognize that physical size does not have a lot to do with giftedness. An important difference, albeit small, was found in the indication that teachers having taught five or more years see less importance in both social and personality traits. This finding is consistent with the findings of Howell & Bressler (1988) which found a significant correlation with years of teaching gifted and more cognitive based teaching styles while showing a significant negative correlation with the sensing- feeling teaching style. This trend seems also to be true for the sample of teachers of younger students. Young children are very social, and learn about their acceptance in the world through their interactions with people. Because children learn early to value or not value school, often based on how they are made to feel about themselves, educators must continue to examine how teachers assess children's abilities and how we communicate this assessment to the children.

Given results of the present study it would seem to be essential that effort be given to understanding how teachers are actually identifying and responding to gifted preschoolers. It may then be possible to make changes in teacher education programs to insure that what is known about preschoolers is used in the effort to identify potentially gifted preschoolers. Continuing to apply a single concept of "gifted" to all children, no matter what their age, not only eliminates some potentially gifted children at early ages, but it may also actually play a role in altering the development of young gifted children who do not fit the mold expected of older "gifted". It is time that preschool educators and gifted educators work together to develop methods of identifying and encouraging young gifted children in ways uniquely appropriate to them.

Mitchell (1988) presented ideas for identifying culturally different gifted preschoolers that might well be appropriately used for all young children. In one sense, all young children are culturally different since they differ from adult, middle class culture. First, expanding the notion of potential giftedness to include all children in the observation would provide insight into behaviors that might otherwise be overlooked. Second, providing observation sheets for the teacher to use in assessing children's behavior will allow the observations to become more objective and will encourage teachers to include all children because omissions will become obvious. This objectivity may also allow teachers to discover aspects of the class structure that prohibits aspects of creative activity. Because teachers value certain performances, they may structure their class for this performance only.

Third, carrying out observations over a number of weeks, or months, will allow the teacher to discover the patterns of development and abilities. Young children's behavior is not as consistent as behavior seen in older children, and observing children only once or twice provides too many opportunities to miss examples of sequences indicative of advanced reasoning.

Kitano (1985) has shown that observing gifted preschoolers over time results in their demonstrating frequent, but not constant, instances of behaviors of advanced knowledge, creativity, social maturity, and thinking skills. Much of the time, however, the gifted young child demonstrates behaviors very consistent with his/her chronological age. A three-year-old is always a three-year-old. The observance of everyday activities over time allows for a much better representation of a child's abilities to be seen. It is known that if you give preschoolers a choice of 3 or 4 activities they will most often select the activity that is the most developmentally correct (Parke & Ness, 1988).

What is needed at this point in understanding gifted preschool/primary children is the observation of what is actually happening within classrooms. Only when observations and assessments provide accurate indications of ability is it possible to appropriately encourage the strengths of young children.

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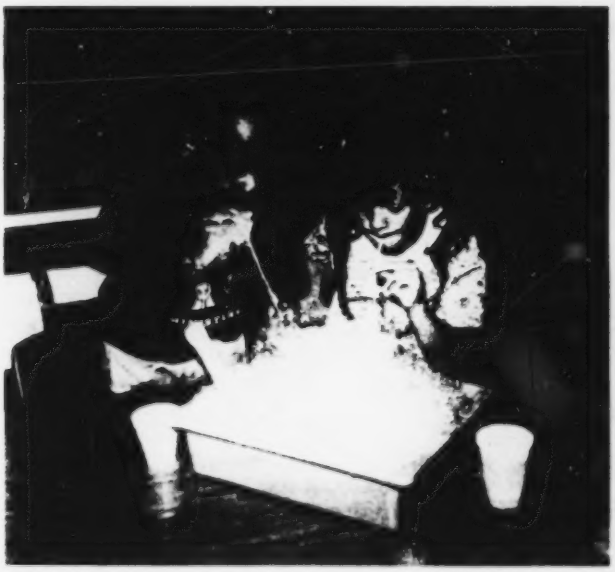

BEST COPY AVAILABLE

CHARACTERISTICS OF GIFTED CHILDREN AND HOW PARENTS AND TEACHERS CAN COPE WITH THEM

by Annemarie Roeper, Cofounder of the Roeper School, Bloomfield, Michigan

Child: Unusual emotional, creative and intellectual development and an unusual development of "Self." Gifted children often see themselves as being "outsiders" to their groups, class or family.

Parents: Parents need to change their normal expectations and attitudes and expect unusual reactions and behavior from their children. Gifted children need much love and emotional support. They need to be recognized, respected, and understood. They need to be "insiders" for parents. Gifted children need intellectual comradeship. Parents need to avoid the temptation to over-organize their gifted child. The child often has special interests already. It might be better to follow the child's leads where stimulation is concerned. Enjoy common interests. Gifted children do not have to go to more concerts and museums than other children. They may not be ready for special responsibilities in the household.

Teachers: Teachers need to approach gifted children with expectations different from those of other children as well as similar expectations. Gifted children are not likely to be the most popular children. They may need the teacher's particular emotional support and they may need an intellectual relationship. They often tempt you to make a teacher's helper out of them. Don't follow the temptation. Gifted children need stimulating discussions and projects which require logical thinking, like creating mazes, how does a letter get from home to school, etc. They react very well to the inquiry method. Don't expect the child to be a reader at a young age, but if she is, provide the opportunity to read at an appropriate level.

Child: Gifted children have a tendency to be perfectionists. They may for that reason choose not to expose themselves to failure. They may not try anything new. They may have unrealistic expectations of themselves.

Parent: The child may have high expectations of himself. It is important that parents do not add to this pressure by their own increased expectations. Help him look for realistic standards. Explain the learning and growing process. Explain that learning takes place by trial and error. Let them know about your own failures. Help them get the courage to try something new, for example: learning to ride a bike.

Teacher: Perfectionism may lead to showing off, may lead to avoiding anything that leads to failure. The teacher needs to be aware of this, and create projects that show processes of growing and learning. For example, collect baby pictures of the children so they can see where they came from and where they are going. Invite older children for comparison. Discuss what they themselves can do now, what they couldn't do when they were babies, and what the older child can do now and what the adult can do. Make clear to them that learning is trial and error. Admit all mistakes as a teacher. Encourage and expect them to try new things. For example, the child may build the same building every day with blocks or paint the same picture because he knows he can do that particular thing. Insist that he try something new if he seems ready for it.

Child: Child may not know his own place in the family and try to make all the decisions. He may want to be the adult in the classroom.

Parent: As children grow older, they should be allowed to participate in decision making where they are concerned, and possibly where the family is concerned. However, it is important to be sure to remain realistic. The gifted child is still a child. You by virtue of age and experience have the responsibility to know more answers and must make final decisions. Some parents are in awe of the gifted child. This makes them insecure and confused.

Teacher: Leadership must be in the hands of the adult. One should not be in awe of the gifted child and make him feel special or exhibit his particular accomplishments. The gifted child needs definite frameworks of expectations, within which he needs freedom. He needs to learn the process of decision making, he needs to be allowed to participate in some decisions within the framework and be respected for his knowledge. But the final decision must be the teacher's. The expectations of the teacher, however, must be realistic in terms of this particular personality and not in terms of the accepted rule.

Child: The gifted child often has a global point of view. Her perception, concepts, and interests, may be beyond others her age. She may be truly worried about the state of the world. She does not like to be deceived and she knows when she is deceived or kept in the dark. She wants and needs people to be honest with her.

Parent: It is important to provide the opportunities she seeks to understand the world. Discuss her concerns with her. Let her know you understand and that you share them. Try not to divert attention or to just make her feel better. Take her seriously; otherwise, she will feel she is left helpless and alone.

Teacher: Give her opportunities for exploration. She needs to build a structure of how the world functions in her own mind. Social Studies and Science Projects should be a part of the curriculum for all children within a framework of active inquiry.

Child: A gifted child may or may not be a high achiever. Gifted children do well in areas that require logical thinking and often not so well in mechanical

skills. They may or may not be self-taught or early readers. Sometimes they are late readers.

Parent: Do not expect the gifted child to be a high achiever, especially not in skill areas. Do not push, but maintain standards within a wide range. Allow learning to continue to be a joy rather than living up to some obligation. The gifted child learns because he must master the world. Help him learn what he wants to learn. If he is excited about reading, help him read. If he wants to learn scientific facts, help him do that. The learning process will be even more exciting and satisfying if you explore areas that interest both you and the child.

Teacher: If a child is ready for academics like reading or math, help him, but do not make it an obligation. Gifted children often do not do well in small muscle coordination. They often do not do well in computation or other skills. They do, however, understand math, science and other concepts very well. To learn basic concepts with hands-on materials is often exciting for gifted children.

THE NEEDS OF THE YOUNG GIFTED CHILD (A SHORT AND INCOMPLETE OVERVIEW)

Annemarie Roeper

One of the outstanding characteristics of the gifted child is the dichotomy between the intellectual and emotional development. At no time in their life is this more noticeable than during the early years of childhood. A child may be intellectually on an eight-year-old level, emotionally on a three-year-old level, mentally six, and chronologically four. This has a great many psychological consequences. The child will not act in accordance with our expectations. He or she may have a vocabulary and understanding that constantly delights and amazes us. For example: a group of three-year-olds is occupied with water play typical for three-year-olds. Three little girls scoop up water with a paper cup, pouring from one cup to the next, each in the hands of one of the children. Suddenly one of them says, "This is what you call cooperation." At the same time she wets her pants and her expression changes from one of enjoyment to one of guilt. Here we have a gamut of emotions and thought processes. The word "cooperation" and knowing what it means is way beyond the usual expectations. The wetting is below the expectations and the expression of guilt may be beyond the usual at this age. Their awareness of reality is greater than that of others their age. They feel guilty for normal actions of aggression or infantile behavior. They are eager to understand the world because that gives them a sense of mastery. They are often loners because their language and interests are not understood by other children. For instance, chess may be exciting and understandable for a five-year-old who is gifted. A number of them are self-taught readers; others may not be particularly interested in learning to read. They are perfectionists; they are often fearful of the unknown and of many other things.

What does this mean for the teacher and parents? The gifted child often delights us with his unique expressions and observations. We may forget that the same child may need much attention from the adults to help him cope with their emotions of anxiety and guilt stemming from a particular awareness of the complexities of the world. They need the help of the adults to help them bridge the gap between themselves and other playmates. Gifted children also like the stimulation of conversation with adults.

Mental activity is as exciting and important an activity for them as physical activity. To watch a gifted child in an act of discovery is exciting. Opportunities for this need to be provided through free play, discussion and exposure to the world such as science concepts, nature study, social studies, continuous and in-depth projects including the study of the globe and "hands-on" math material, etc. The mechanical acquisition of learning the alphabet or to count should not take up a major part in the life of the gifted child. On the other hand, intellectual stimulation such as learning about the structure of the world is deeply desired by the gifted child. Gifted children also have a great need for and enthusiastically enjoy physical activity including sports, dance, and gymnastics as well as creative activity such as art, photography classes, and music.

Identification is, of course, not easy, yet most of us have a feeling for what is typical for the gifted child, and the experienced teacher's observation is often confirmed by IQ tests.

There is much more to say about the needs for the young gifted child. I'm hoping, however, that this will give you a glimpse of it.

THE WHOLE CHILD AND THE GIFT — NURTURING OUR VERY YOUNG GIFTED STUDENTS

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As recently as the last decade, parents, educators, and researchers have shown a willingness to acknowledge early indicators of giftedness in young children. Indeed this century's history is resplendent with evidences of child prodigies: Yehudi Menuhin (violinist); Norbert Weiner (developed cibernetics/computers); and Yani who in 1990, at the age of 14 was the youngest person to exhibit her paintings at the Smithsonian). The growing knowledge of early childhood development necessitates serious study and nurturing of gifts and talents as they first appear in the early years.

Developmental time, as we relate it to the young gifted child, is a most perplexing phenomena. According to early childhood research, "sensitive periods" (Montessori, 1912), "stages" of development/cognition (Piaget, 1950, Erik Erikson, 1964), and "hierarchies", (Maslow 1970), have been identified as way stations in observing and nurturing young children. While we, as educators and parents, are willing to lean on these able observations for the general population of young children, we become befuddled when we encounter children who demonstrate talents at stages in their early years that don't correspond to these guidelines.

Out of sync with these developmental waymarks, the gifted child must be carefully considered in regard to the wholeness of his/her life. While we are dazzled by the spontaneous emergence of a young talent, we must actively consider the wisdom of nearly a century of dedicated anthropologists and educators, and not be blinded by the brilliance of only one light in the spectrum of colors that define the reality of the growing, developing gifted child.

"Handle with care" the whole child. This is a demand on our patience and perceptions, and upon our society. When we have a child who enjoys playing two-hand piano, interpreting and reading music, and who is engrossed in mastering these skills, we must develop patience while remaining sensitive to the child's developmental needs as a growing person.

Repetition - a powerful learning tool for a young child - was observed by Maria Montessori in her early work with children in the San Lorenzo slums of Rome, Italy in the early 1900's. Exquisite pleasure in repetition exhibited by the young child sometimes confounds the adult who may label repetition as boring. Adults may remark that their child likes to do things over and over again, but it becomes even more remarkable when you actually sit down and record the number of times a child will perform a task. Therefore, we need the PATIENCE to allow for this repetition in the area of the talent. For example, Yani painted her favorite monkeys for a year at age 4 (one of my students also painted/drew his dragons for a year at age 4). Be on guard that while we are being patient, we do not relinquish our consistent awareness that we are nurturing a whole childhood experience.

"Handle with care" - maintaining a BALANCE in the development of the young gifted and talented child. Those expansive years of personality development and social growth from ages 4 to 8 need as much care as the special talent the young child is exhibiting. Mathematical logic and brilliant expression in visual art are gifts to society as much as they are to the individual child. Too much adult adulation and attention to the "talent" absorbs the gifted child's point of social reference. The child is pleasing the adult world just by exhibiting a "gift." Meanwhile, the gifted student's peers are developing their respective personalities. The gifted child's personality development, on the other hand, is relegated for another day, another time, perhaps never.

A young child who is precocious with words may find mathematical constructs tedious and unimaginative. For example, a 6-year-old student of mine became impatient and frustrated when it took time to arrive at the answers for math materials I gave her. I began to recognize, however, that this challenge was providing her with empathy towards her classmates. I saw that she began to understand some of their frustrations in learning.

This young student began to exhibit a sincere interest in the social activity of her peers. While she was previously polite and cooperative, a distance surrounded her interactions with the other children as if she desired the children to act like adults. Now she was awakened to a world of her social childhood. By struggling with her own learning difficulties, she developed empathy towards others. However, as she became involved with the activities of her peers, she seemed to be spending an inordinate amount of time in other pursuits (learning by repetition). What of her specific talent, did it wane or disappear? While her personal interest momentarily diminished, her talent remained for it was continually nurtured, that is, the fire became a steady flame instead of a fury. (She has perfect pitch and extraordinary audio recall and has read with expression and meaning since she was three). Her sojourn into the world of her peers only enhanced her talents. The isolationism many talented children experience was prevented in this case by addressing the whole child and her development while preserving the "gift."

I personally became vividly aware of this social isolationism when I asked a cross section of gifted and talented boys, ages 10-12 from mixed incomes, what they wanted to study most in an open-ended session. As they knew that I had been a movement coach for a nationally recognized basketball team, they asked me to teach them basic basketball skills. Because they were perceived as "brainy" by their peers, they were never chosen to play in the neighborhood games and were ostracized for their "ignorance of ball." They avoided the courts, becoming more and more socially isolated because of their "brains." This incident has been a determining factor in my work with gifted and talented youngsters. I have observed that learning social skills at the developmentally appropriate period can prevent this prevalent difficulty in our young gifted and talented

children by giving them the inner self-confidence to participate in their present and future society.

Returning back to my 6-year-old student - needless to say, she leaves her early years with her personality in balance with her extraordinary gifts. She has the inner confidence of being well-loved and knowing how to love with her gifts as her tools. Her parents also have become aware of the need for maintaining a balanced outlook: expecting the joy that her talents solicit as well as nurturing their growth within the domains of a full childhood.

When we speak of educating the "whole child and the gift," we must embrace the "whole child and its nurturing society" especially as it concerns the natural emergence of gifts in early childhood in all social classes. It is good for us to remember that many of the innovative and fundamental studies on the growth and development of children were conducted in the slums and ghettos occupied by the children of the poor. Head Start has been a primary contributor to studies in recent decades and the San Lorenzo slums of Rome have provided the setting for the seminal work of Dr. Maria Montessori. Herein lies a profound irony.

Nature endows all with a shower of talents and gifts. We are responsible for nurturing them, individually as a parent, as an educator/researcher, and as members of a democratic society christened with the history of opportunity and possibility.

"Handle with care" the child, with his/her gifts, the sanctity of childhood, and a society in which they will flourish. Take all children seriously, as was articulated in Lewis Mumford's 1939 address, The Social Responsibilities of Teachers: "The watchword for the new age is not conquest but cultivation...The age of expansion was the age of unbalance: unbalanced environments, unbalanced activities, unbalanced men. In facing the new demands for stability and dynamic equilibrium, we must prepare to modify profoundly our conceptions of both the personality and the community...whether balance is to be achieved by regression or whether it is be achieved by integration at a high level" (p. 141).

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INTEGRATING THE GIFTED CHILD INTO FAMILY LIFE

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Often when a child is identified at school as a gifted child, a parent's pride quickly becomes panic. How is the family to cope with this special young person? Are the parents themselves smart enough to deal with this level of talent? So as not to stifle creativity should the parent "give in" to the child's wishes and rarely discipline?

Educators rightly zero in on the process of developing the child's giftedness. But at the same time, parents and siblings need guidance in knowing just how home-life correlates to the new challenges of life with a gifted child.

While in the school environment, the child benefits from enrichment and grouping. At home it's a case of "what you see is what you get" --a collection of people of varied abilities bound together by the family ties of love, memories, and common objectives. It can be more difficult to live in this sometimes startling diversity, but the real world is a very diverse place and the home teaches grand lessons in getting along in an eclectic environment.

Thus, there is plenty for parents to do without getting into the teaching academics. Still, the wise parent sees himself as an essential element in the child's progress, no less a partner than the teacher. Parents can use aid in three areas:

1. Creating the proper home atmosphere
2. Encouraging home activities
3. Molding character

1. The nurturing parent's work of creating a home atmosphere

The classroom has all the proper elements of learning--the tools, the teachers and mentors, large segments of time, an outline of educational goals, and special resources. While school activity may sound more important than home activity, what goes on after school hours has a definite impact on what goes on in school.

The home, too, has vital elements. Some of these are: "A place of your own" -- part one. Children need space. Even when sharing a bedroom, they need to have their own areas. Parents should make it clear to children that possessions are not to be borrowed without permission. A box or cupboard with a lock on it gives a child a place to keep special possessions. A gifted child needs the security of knowing that his special projects will not be disturbed.

"A place of your own" -- part two. Each child needs to feel that he has a place in family life that is "his own" --a niche that he alone fills. This place is not because he is a gifted child, but because he is a member of the family. Loving a gifted child--and every child in the family--should be on the "no-matter-what" basis.

An environment for creative living. Home resources are important: a quiet place to study and do homework; essential tools including a current dictionary and encyclopedia; a cozy place to read; and a space for projects.

But beyond the physical elements is the mental environment. The words "Let's look it up" and "Let's try it" should be heard often, along with words of congratulation for an achievement and encouragement after a failure. A parent must find the time to listen to a child's ideas and questions. Pressure-free living nurtures creativity. A parent, however, should not give more time or money, or show more interest in a gifted child than in other children in the family. This is a tall order, but absolutely essential.

No labels, no comparisons. Avoid labels such as "the smart one," "the cute one," "the clever one." Many parents of gifted children find that other children in their family have diverse talents for success, but sometimes they are slower to appear. Don't overlook the late bloomer. Comparisons only give feelings of pressure to the gifted and feelings of jealousy or hatred to siblings. Just accept each child where he is now. The future will take care of itself.

Family rules. These essential parameters are for the entire family. Excelling at science or music or sports does not excuse one from following the rules or doing a share of the work at home. Decide together on the rules and create a rule book. Print out each rule on a separate page for children who read, illustrate with a picture for those who don't. This way you can easily remove outdated rules and add pertinent ones. Let each child know what is expected and what happens if a rule is broken. When a rule is explained, mean what you say, give no second chances--that's hard, but important. (For preschool children you may want to give one warning, but only one.) Be sure that you don't let a gifted child "get by" with things. Society, too, has basic rules and the home is a good place to practice what's right and what's wrong.

Be supportive without taking over the teacher's role. The home is not the school and a parent should encourage the work of a gifted child, but not do it for him. Unless specifically asked by a teacher, a parent should not get involved in teaching a subject, though the parent may help a child who doesn't understand an assignment. A parent's job is to (1) Ask daily about the homework, and (2) Provide time and place for it to be done. After that, don't prod. A child must do the work or take the consequences--this is part of his growth. This doesn't mean you let a child fail, but there is nothing worse than a parent who has more interest than the child in the programs for the gifted. Really wanting to learn more is part of the gift to the gifted.

Problem solving. The skill of finding solutions is as integral to success in so many school subjects and translates well from school to effective home-life, and vice versa. Within the framework of a weekly family meeting, members of the family can learn the problem-solving method of gathering the facts, comparing alternatives, choosing and implementing the best ideas. Brainstorming is a noisy, fun and useful way to gain good ideas, too. In addition, regular goal setting (monthly and yearly) lets every family member set objectives and feel the satisfaction of achieving some of them.

"Why not?" This attitude best describes a home where new ideas are tried, then accepted or rejected on merits, not pre-conceived opinions. Certainly if a child wants to jump off the roof, you will suggest a tree branch as the alternative. But letting a child try things, even when you are quite sure they won't work, lets a child learn for herself first-hand as opposed to being told how things work.

2. The Importance of after-school, home-style activities

Coming home from school should be a change of pace, not more of the same. Research shows that quality homework is done just before and after dinner, as opposed to immediately after school. So, coming home should mean something different to the gifted child and to his siblings.

Often a parent is not on hand, so the kids need to understand what should happen: a snack followed by outside play in a safe place; a book to read; a craft to explore; a place to go; etc. Notice that television viewing and games are not options. We have overplayed the benefits of achieving nimble minds and fingers through video game play, and we have overplayed the broadening benefits of non-interactive soporific television viewing. Consider these better alternatives:

Organized activities. Limit these to one or two a week. Avoid organization every minute. Let a child choose a club, sport, or enrichment group and be committed for a semester or more. But let most after-school hours be totally free of organization. A gifted child benefits from "free time," by just choosing what to do on his own, for being with other kids, or for just doing nothing. Unless a child is really enthusiastic about an organized activity, let the child switch off each year and try something new.

Physical play. Too often a gifted child is bent over a desk or table for many hours of the day. Even when this is necessary, encourage a break every 30 minutes for a run around the block, a game of ping pong, or playing catch with a sibling. The gifted child needs a sound body as well as a sound mind. And, if the child doesn't excel in sports, so be it; he will have the advantage of learning to cope. Certainly you don't force a child into baseball if he hates it, but there is a sport or exercise that each child can do such as walking with the family, roller skating, a swim at the Y, or cycling to a friend's home. Parents need to encourage regular physical activity.

Chores. Every child needs to know how a home functions and how to take care of his household and personal needs. Rotate tasks within the family. See that children know how to wash clothes, mow the lawn, care for the baby, clear the table, cook a simple meal, take out the trash, vacuum and dust. Chores are a good change-of-pace from academics. Sometimes, provide a chore project that takes two children to accomplish. This results in another worthwhile lesson of cooperation. Remember, if nothing else, chore time can be an opportunity for creative thinking.

Homework. A certain amount of time will be spent doing homework study and projects. A gifted child might be either speedy or sluggish at this. Together, look over the work to be done. Play the game of estimating how long it should take. See if you or your child is the best guestimator. Teach the value of time, such as when to spend it, when to conserve it. With the agreement of both children, let the gifted child serve as mentor for a

sibling. However, let the sibling do something for the gifted child in return. Remember, every child has a special talent.

Mealtimes. Occasions for meaningful conversation are vital. This important form of bonding can't wait for the weekend when there is more time. Thus breakfast and dinner are built-in times when talk should be free-wheeling and non-judgmental. This means that the meals need to be around a table as opposed to in front of the TV, for when the TV is talking, the family is not. A parent should also provide a time for conversation at bedtime. This means that a parent can't just shout "good night," he has to actually go to the quiet of a child's room. While a parent should not stay in the room until the child falls asleep, this in-the-dark conversation can reveal thoughts that might not be said in the light. Of course, a wise parent creates many other opportunities for talk, but mealtimes and bedtimes are built-in opportunities.

Excursions. Memories are made from family activities. While most excursions are relegated to the weekend, weekday excursions should also be planned. These could include an after-supper walk/talk in the park, going out for ice cream, a quick swim at a pool, or a visit to the library. Weekend excursions should be planned in advance so the entire family participates. Some of these will partake of the special knowledge of the gifted child, some should be totally new experiences. Outdoor activities should be balanced with indoor ones such as museums, plays and musical events. See that you partake in a new experience as often as you go to a movie or have a picnic. Many are free or low-cost and enrich the child's experience beyond the bounds of school.

3. Teaching socialization

Sometimes society pictures a gifted child as a lopsided egg-head. However, a wise teacher encourages diversification for the youngster; a wise parent teaches the values of socialization, which is best done within the family. Selfishness and pride -- the need to always be the star -- can spoil the life of the most brilliant person.

While the classroom may seem like a perfect environment, the child must learn to cope outside those caring walls. The world is not a perfect environment. Creativity may be derided or ignored. Bullies, cheats, and manipulators need to be understood for the deceivers they are. This is part of growing up and growing outward, and is an important lesson for every gifted child.

The family circle is a testing ground for life in the larger circle of all humankind. Starting in early childhood, character is best molded and most often influenced by the example and standards within the family. Parents of a gifted child need to be alert to these elements of socialization:

Learning to be a follower. Leadership comes easy, for some followership can be frustrating. While all children within the family need leadership opportunities, a gifted child especially needs the patience to be supportive of a sibling or parent who has the leadership position in certain activities. A parent should provide opportunities for followership in household tasks, in planning a family event, in sports and games.

Learning to appreciate others. No child is devoid of talent. It is often easier to be a parent of a creative child than a child whose abilities are not yet evident. The discovery of talent takes persistence, sometimes years. Parents set the standard for appreciation by their own comments for work well done, or just for work done. The practice of saying "thank you" for help of any magnitude should be a "given" in the family. A gifted child once said about a shy sibling: "It was so great to have someone willing to just watch me and listen to me." At first, parents may need to help a gifted child recognize the important qualities of other family members, until appreciation becomes a natural response.

Learning to be well-mannered. There is a difference between cockiness and confidence, arrogance and competence, showing off and silliness. Some gifted children exhibit the former quality in each pair and need guidance so as not to become obnoxious about their talents. How to act in public (and in private) can be a difficult task for a child who has many abilities. Still, a parent can emphasize the importance of being considerate through training in such areas as table manners, everyday helpfulness, conversational hints, introductions, party etiquette, thank-you note writing, etc. No matter what the IQ, there is no excuse for offensive behavior. One aspect of good manners is being outgoing. Sullen shyness can give the impression of "I'm better than you" snobbishness. Give children basic social training and give them opportunities to practice these talents within the family. Willingness to talk, how to be a part of a discussion, how to respond to questions, how to draw out others, makes a gifted child a more interesting child.

Learning to accept failure. The lumps of life come to all. How we respond, sets us apart and determines our future successes. The average child usually finds successes and failures a manageable part of life. But the gifted child, accustomed to more successes than failures, often takes the failures much harder. Where self-worth should remain high, the gifted child who has failed in some area, dwells more deeply on it and may blow it out of proportion. Home activities and the parent example should help a child handle the bad with the good. Keeping things in perspective, taking the long view, being grateful for past successes, finding a benefit from a failure--these are skills a parent must teach.

Learning to accept feelings. There are no wrong emotions, just wrong responses to them. Everyone has felt anger, hatred, frustration, or guilt at one time or another. The wise person learns what to do about these feelings, and how to grow upward from the experience. The gifted child must learn not to bury his feelings. but how to understand them and respond positively to them. A sensitive parent may have the rapport to draw out a child on the subject of innermost feelings, or, perhaps, there will be another person such as a grandparent or Sunday school teacher whom the child can speak with comfortably. A child needs a place to put her feelings when she can't deal with them immediately, and talking with an understanding person is one option. Another place to "put" these feelings is in a daily journal. One gifted youngster I know has kept a journal for over 20 years. She says that just writing down feelings helps her get them in perspective and later find a good response.

Learning to be a whole person. While a child may

excel in one or two areas, he shouldn't become one-sided. There has been much commendation of The Renaissance Man--or Woman. We now see, however, that there can be The Renaissance Child, interested and aware of his surroundings in a shrinking community, nation or world. Specialization sometimes comes too soon and the teacher and parent should work together in developing the essential wholeness of every youngster.

Certainly a parent of a gifted child should be happy to be entrusted with the care of that child. Instead of being intimidating, it should be an exciting challenge. No one said parenting was simple, but it needn't be arduous. There are challenges that are life-threatening, such as disabilities, drugs, and psychological problems, but the challenge of parenting a gifted child is one of joy and adventure. A parent should accept this challenge with hope, patience and understanding.

The gifted child is not some extraordinary person beyond the family's comprehension. The gifted child functions within the family, and having a gifted child in the home is not a blessing to the child alone. It is an uplifting event that benefits the entire family and underscores new horizons for each family member.

FAMILY FACTORS IN THE ADULT SUCCESS OF HIGH IQ CHILDREN

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Our understanding of gifted individuals has been enriched by the research of scholars employing two distinct developmental perspectives (Grinder, 1985). The first studies of the gifted in Great Britain (Galton, 1869) and the United States (Yoder, 1894) were retrospective. Their authors took adult eminence as their starting point and examined biographical accounts of their subjects' lives, hoping to glean information that might explain adult manifestations of giftedness. This approach had its usefulness, but it was criticized by such writers as Hollingworth (1926), who claimed that "the study of eminent adults has left us with an array of facts, interesting but ambiguous...from [which]...we cannot determine cause and effect" (p. 16).

The advent of mental tests in the early part of this century gave rise to an alternative methodology. This prospective strategy, adopted by Terman (1925), Hollingworth (1942), and others, offered the researcher the opportunity to identify children with high intellectual aptitude and to follow them longitudinally, thus gaining insight into factors that facilitate and frustrate the realization of what Terman called "the promise of youth" (Burks, Jensen, & Terman, 1930).

This latter approach afforded the researcher quite a bit of flexibility, especially if he or she were prescient, compulsive, or fortunate enough to gather, in the initial stages of an investigation, data that would in time prove to be essential in explaining phenomena occurring later in life. An example of this is found in the last two volumes of Genetic Studies of Genius (Terman & Oden, 1947, 1959).

As their subjects reached midlife, Terman and Oden had a large cohort of subjects selected for high general ability; some markers of adult life success; and a wealth of data related to the subjects' traits, abilities, and experiences. This enabled a comparison of the "A" and "C" men, the male subjects who as adults had experienced the greatest and the least professional success respectively. Terman and Oden's examination of the antecedent factors contributing to the differential accomplishments of these two groups led them to the conclusion that two clusters of traits, "drive to succeed and all-round social adjustment" (1947, p. 352), most clearly discriminated between the As and the Cs.

This aspect of Terman's longitudinal research is considerably important today for a number of reasons, of which we will cite two. The first relates directly to educational practice. Programs for the gifted exist primarily to serve children shown by various predictors to have unusual aptitude in one or more areas. To the extent that we are concerned providing an education that will help these children realize their potential, it is essential that we strive to discover which factors facilitate and which frustrate the realization of early promise. Terman and Oden realized this when, commenting on their findings, they wrote,

> Intellect and achievement are far from perfectly correlated. Why this is so, what circumstances affect the fruition of human talent, are questions of such transcendent importance that they should be investigated by every method that promises the slightest reduction of our present ignorance. (1947, p. 352)

The second reason that underscores the importance of Terman and Oden's A and C analysis has to do with it recent application. Their finding that, IQ and life success were "far from perfectly correlated" within the upper ranges of the IQ distribution, has prompted some to call for a rethinking of the way in which giftedness is defined in the schools. The stated goal of the resulting reconceptualizations is to effect a better fit between the traits that define giftedness in children and those that presage adult productivity.

Despite the importance of Terman and Oden's retrospective analysis of their A and C groups, there are

reasons to question the generality and validity of their conclusions. One of these concerns the fact that only male subjects were included in this analysis. This is a significant limitation since, as Tomlinson, Keasey and Little (1990) point out, there is a "growing number of studies documenting an impressive set of longitudinal relations among boys, relations that are not duplicated in female samples" (p. 443). Studies that incorporate female subjects and analyze their data separately are clearly called for.

Second, the Terman cohort was, to a significant degree, a product of his time. This, too, is a limitation, for as Giele (cited in Shuster, 1990) points out,

> The life experience of a particular birth cohort who faces a given set of social or economic circumstances may result in a distinctive developmental pattern. But for other cohorts, brought up differently and encountering a quite different environment, these patterns might not recur. (p. 471)

Especially at this time, when the issues facing gifted girls loom so large (see, for example, Eccles, 1985; Kerr, 1985; Silverman, 1986), it may be unwarranted to draw conclusions about the realization of potential in today's girls based on conclusions drawn from an analysis of male subjects born in the first decade of the century. Finally, there is a problem discernable in much of the research in this area. As Fowler (1981) indicates, "few investigators have systematically explored home methods used with bright children, classical investigators [have failed to do so probably] because of their genetic bias" (p. 331). Terman was no exception. As a result of his hereditarian and purely psychological perspective, it is likely that the factors Terman and Oden identified as salient in the life success of their cohort are not the only, or even the most important ones. A study of the data reveals that there were significant environmental differences between the As and the Cs, most noticeable in the subjects' families, that contemporary researchers would point to as being of more than minor interest (see, for example, Jarrell & Borland, 1990).

Among these are the fact that the As were much more likely than the Cs to come from intact families in which the father had graduated from college, was employed in a professional capacity, and earned a higher income. Even such factors as the mean IQ of siblings and the number of books in the home library favored the As to a significant degree. If one adopts a psychosocial perspective and believes that environment plays an appreciable role in human development, one must conclude that family status and process variables, especially those related to parental education and socioeconomic status, were probably the main determinants of the differential life success experienced by the As and the Cs.

This interpretation of the Terman and Oden data is consistent with the results of contemporary research. For example, Tomlinson-Keasey and Little (1990) employed structural equation modeling to isolate factors that predicted occupational success for both the male and the female subjects of Terman's research. They found that the strongest predictor for both sexes was educational attainment which, in turn, had parental education as its strongest predictor. This supports the interpretation of the Terman and Oden data advanced above. The data reported in the final two volumes of Genetic Studies of Genius indicate that the effects of differences in the families of origin of the As and the Cs were discernable in the differential educational attainments of the two groups dating back to the high school years.

However, in the Tomlinson-Keasey and Little study (1990), the subjects' educational attainment, although the strongest predictor of occupational attainment, only explained 34.7 percent of the variance for the male subjects and a mere 6.2 percent of the variance for the female subjects. These relationships are probably attenuated to a degree by the passage of time, but they also suggest that life achievement and its predictors "are not highly canalized and that a variety of other variables and experiences at various points during development may well have a significant impact on the adult's achievements" (p. 454). It is logical to begin the search for these "other variables and experiences" in the family, as many have suggested. Albert (1980), for example, states that,

> Most explanations for the differences between promise and fulfillment point to substantial differences in early facilitating environments, family factors, and educational career opportunities. (p. 174)

Similarly, Colangelo and Dettmann (1983), after reviewing the research on parents and families of the gifted, call attention to "the importance of home environment and family relations on the later achievement of high-ability youngsters" (p. 25).

However, there is still quite a bit to be learned about the specifics of the relationship between home environment and the future accomplishments of high-IQ children. Colangelo and Dettmann point out that "there is still considerable confusion in terms of what the major family influences are" (p. 25). In the same vein, Janos and Robinson (1985) state that "familial influences on the development of intellectual giftedness are poorly described in the literature despite their central role" (p. 182).

Albert offers some clues as to the manner in which the family might function to facilitate or to frustrate the realization of the "promise of youth" among the gifted:

> Families are defined as experience-producing (generating) and experience-selecting (directing) agents in the development of their members, especially the younger ones. Furthermore, parental experiences, behaviors, and personalities give form and substance to these two basic family functions. (p. 174)

If this is true, an examination of parent-child relationships and interactions within families of gifted children should help us understand the ways in which families either facilitate or frustrate the development of cognitive giftedness in children which translates into achievement in adult life.

Background of the Present Study

The research presented here is part of a larger study of a cohort of individuals who, as children, were identified as intellectually gifted and graduated from a special elementary school for high-IQ children. The authors are engaged in an investigation into the antecedent factors that contributed to the life success, variously defined, of these individuals. While that multivariate analysis is still in progress, data have been uncovered that are worthy of attention in their own right. The purpose of this component of the larger study is to investigate the relationship between certain family-of-origin variables and various indices of adult accom-

plishment in a group of adults who were identified as gifted in childhood on the basis of IQ. Specifically, the following research questions were posed:

1. Which process variables in the subjects' families of origin, if any, are related to adult self-report measures of success and in what manner?

2. Is there evidence that different patterns of family interaction are related to the life success of male and female subjects?

3. Is there a suggestion of greater same-sex or cross-sex parental influence on male and female subjects?

Method

Subjects

The sample consists of 198 individuals, 90 males and 108 females, who graduated from the Hunter College Elementary School between 1948 and 1960. Hunter College Elementary School was established in 1941 as a laboratory school for intellectually gifted children living in New York City. Terman himself suggested that students attending the school would constitute a good comparison group for the subjects of his study (Seagoe, 1975). The subjects were identified as intellectually gifted while in elementary school on the 1937 revision of the Stanford-Binet (Forms L and M). The IQ range is from 122 to 196, with a sample mean of 156.6 (157.0 for the males, 156.3 for the females).

In addition to age and geography, there are other differences between this cohort and Terman's. For example, unlike Terman's subjects, the Hunter group is largely Jewish (65.7 percent, although 64.3 percent of the sample report no or little adult religious inclination), heavily Democratic (73.4 percent, with more "nones" and "others" than Republicans), and more likely to be liberal (35.3 percent) or moderate (48.9 percent) than conservative (15.8 percent). The subjects are well educated; only six lack college degrees, and nearly half (46.7 percent) have doctorates. A large majority (84.4 percent) is employed in professional occupations. A more extensive description of 156 of the present subjects (those with IQs over 139) can be found in Subotnik, Karp, and Morgan (1989).

This sample is clearly no more representative of the entire gifted population of the country than is Terman's. However, it is fairly typical of students identified as gifted in the New York City public schools in the 1940s and the 1950s, and a study of these individuals should further advance our knowledge of the aggregate, pluralistic population of gifted children that still awaits comprehensive study.

Instrumentation

Data for this study were gathered through the use of a questionnaire developed by Subotnik. This instrument was patterned as closely as possible on the questionnaire used by Terman and Oden in the midlife follow-up of their cohort, although some additional items were added. Responses to the questionnaire yielded 198 variables for analysis. The present study involved only those variables that relate to factors in the subjects' families of origin and those that could be construed as indices of adult success (see table 1 for a list of variables).

Table 1

Variables Employed in the Present Analysis and Their Values

Family-Background Variables

Variables	Values
Degree of Rebellion against Father	None or slight/ Moderate/ Good deal to extreme
Degree of Rebellion against Mother	"
Degree to Which Father Encouraged Independence	"
Degree to Which Mother Encouraged Independence	"
Degree to Which Father Resisted Independence	"
Degree to Which Mother Resisted Independence	"
Feelings of Rejection by Father	"
Feelings of Rejection by Mother	"
Affection and Understanding from Father	"
Affection and Understanding from Mother	"
How Solicitous Was Father?	"
How Solicitous Was Mother?	"
How Self-Confident Was Father?	"
How Self-Confident Was Mother?	"
How Helpful Was Father?	"
How Helpful Was Mother?	"
How Domineering Was Father?	"
How Domineering Was Mother?	"
How Friendly Was Father?	"
How Friendly Was Mother?	"
Is Subject Becoming More Like the Mother or the Father?	More like mother/ More like father

Adult Accomplishment Variables

Variables	Values
Degrees Earned	Doctorate/No doctorate
Income	Above group median/ Below group median
Degree to Which Subject Feels He or She Lived Up to Intellectual Potential	Fully/ Less than fully
Honors Received	Some honors/No honors
Publications	Some publications/ No publications
Creative Work	Some reported creativity/ No reported creativity

Procedure

As described by Subotnik, Karp, and Morgan (1989), addresses were obtained for 375 of the estimated 600 individuals who graduated from the Hunter College Elementary School during the period of interest. Completed questionnaires were received from 230 individuals; only those for whom individual Stanford-Binet IQs were available were included in this analysis.

Whereas Terman and Oden limited their analysis to subjects at the extremes of the accomplishment continuum, we explored relationships between family-of-origin variables and accomplishment variables for the entire cohort of 198 subjects. This was dictated by the sample which, compared to that of Terman and Oden, was relatively small with sharply skewed distributions of some of the variables.

Twenty-one family-of-origin variables and six "success" variables, derived from responses to the questionnaire described above, were examined. Where necessary, the response categories were collapsed in order to facilitate data analysis. For example, most of the questionnaire items were in the form of a five-point Likert scale with a neutral midpoint. These were reduced to three-value variables, retaining the neutral value and

combining the two lower and the two higher values.

Since the variables were categorical, chi-square tests of significance were employed to test for relationships between family-background variables and adult-accomplishment variables. Following suggestions in the research literature (e.g., Shuster, 1990; Tomlinson-Keasey & Little, 1990), separate analyses were conducted for male and female subjects.

Altogether, 252 tests were run. In some cases, more than 20 percent of the cells in the contingency tables had expected frequencies under five, thus invalidating the test. Where possible, Fisher's Exact test was substituted, but 42 tests had to be discarded because of too many cells with low expected frequencies. Of the 210 valid tests, 20 (9.5 percent) were significant at or beyond the .05 level.

There is clearly a problem deriving from a higher than desirable probability of Type I error when so many tests are undertaken. A further complication derives from the fact that the responses are correlated, thus ruling out the use of a correction such as Bonferroni's inequality. We are, therefore, presenting the following results in a tentative manner, more as a basis for generating hypotheses for additional research than as a basis for generalization. However, given the importance of the issue of family-of-origin influences on the later development of gifted children, and the growing body of evidence suggesting that these influences operate differentially for males and females, we believe that the following data are worth sharing, even with their limitations.

Results

The results will be presented here in relation to the research questions posed above.

Relationships Between Family Variables and Adult Success

Tables 2 and 3 show the 20 cases in which there was a significant relationship between a family-background variable and a self-report adult-success variable. As can be seen, some outcome variables were more frequently involved than others.

Table 2
Significant Relationships for Female Subjects

DEPENDENT VARIABLE	INDEPENDENT VARIABLE	DIRECTION OF RELATIONSHIP
Degrees Earned	Affection and Understanding: Mother	Higher Degree with Higher Affection & Understanding
Income	Encouragement of Independence: Father	Income above Median with Stronger Encouragement
Income	How Domineering: Father	Income above Median with Moderate Domineering
Income	How Friendly: Father	Income above Median with Higher Friendliness
Honors	Affection and Understanding: Mother	Honors with Higher Affection & Understanding
Lived Up to Potential?	How Domineering: Father	Fully Lived Up with Higher Domineering
Publications	Feelings of Rejection by Mother	No Publications with Greater Rejections
Publications	How Solicitous: Mother	Publications with Greater Solicitousness
Publications	How Helpful: Mother	Publications with High Level of Helplessness; No Publications with Moderate Helpfulness
Creative Work	How Solicitous: Mother	Creativity with High Solicitousness
Creative Work	Becoming More Like Father or Mother? Like Mother	Creativity with More

Table 3
Significant Relationships for Male Subjects

DEPENDENT VARIABLE	INDEPENDENT VARIABLE	DIRECTION OF RELATIONSHIP
Degrees Earned	Friendliness: Father	Higher Degree with Lower Friendliness
Income	Friendliness: Mother	Income above Median with Moderate Friendliness
Publications	Rebellion against Father	No Publications with Moderate Rebellion
Publications	Independence Resisted by Father	No Publications with Moderate Resistance
Publications	Affection and Understanding: Father	No Publications with Moderate Affection & Understanding
Publications	How Self-Confident: Father	Publications with High Self-Confidence; No Publications with Moderate Self-Confidence
Creative Work	Rebellion against Mother	Creativity with Greater Rebellion
Creative Work	Independence Resisted by Mother	Creativity with Greater Resistance
Creative Work	Becoming More Like Father or Mother	Creativity with More Like Mother

The variables of Income, Publications, and Creative Work accounted for 16 of the 20 significant relationships, with Publications accounting for 7. The reasons for this pattern are obscure, although the preponderance of doctorates and individuals who believed that they had lived up to their intellectual potential probably accounted for the paucity of relationships for Degrees Earned and Lived Up to Potential.

Focusing on the three outcome variables that accounted for the majority of significant relationships, one can discern different patterns of relationship. For female subjects, earning an income above the group median was associated with having a father who encouraged independence, who was moderately domineering, and who exhibited a high degree of friendliness. For male subjects, earning an income above the group median was associated with moderate friendliness on the part of the mother.

Publications was the accomplishment variable for which there was the greatest number of significant relationships with family background variables. For female subjects, not having published was associated with remembering the mother as being rejecting, whereas having published was associated with high levels of solicitousness and helpfulness on the part of the mother. For male subjects, moderate levels of rebellion against the father, resistance of independence by the father, affection and understanding from the father, and father's self-confidence were all associated with not having published.

Finally, with respect to Creative Work, female subjects reported at least one instance of adult creative work was associated with solicitousness on the part of the mother and with a belief that the subject was becoming more like the mother than the father. For

male subjects, at least one instance of reported Creative Work was associated with rebellion against the mother, resistance by the mother to the subject's independence, and the subject reporting that he was becoming more like the mother than like the father.

Differences Between the Patterns for Male and Female Subjects

Although the number of significant relationships differed only marginally (11 for female subjects, 9 for male subjects), there were different patterns of relationships. Seven of the nine relationships for the males involved the outcome variables of Publications and Creative Work, with one significant relationship each for Degrees Earned and Income. For females, in addition to one significant relationship for Degrees Earned, Honors Earned, and Lived Up to Potential, there were three significant relationships for the accomplishment variable of income. As with the males, the variables of Publications and Creative Work showed an appreciable number of significant relationships.

Same-Sex and Opposite-Sex Parent-Child Influences

As can be seen in Tables 2 and 3, the three significant relationships for Publications among the female subjects involved the mother, and the four significant relationships for Publications among the male subjects involved the father. For female subjects, the variable of Income also was involved in three significant relationships. In each case, the father was the parent mentioned in the family-background variable. For males, the accomplishment variable of creativity was involved in three significant relationships, with the mother being the salient parent in each case.

Discussion

The results presented above suggest, within the limitations previously discussed, that family-of-origin variables are related to, and may play a causal role in, adult manifestations of success for individuals identified as intellectually gifted in childhood. The suggestion of causality in the previous sentence is not derived so much from these data, from which inferences of cause and effect cannot legitimately be drawn, but from the literature on family-of-origin influences on children's subsequent adult accomplishments. The present data, therefore, lend some support to the conclusions of such writers as Colangelo and Dettman (1983), who assert that "achievement and creativity seem to be related to specific characteristics of parents and the home environment" (p. 26).

Some interesting tentative findings are discernable in the present data, and these are suggestive of future research directions, especially when viewed in the context of sex differences for both parents and offspring. It is interesting that the accomplishment variable most often involved in significant relationships with family-background variables (Publications) revealed same-sex parent-child patterns in each of the seven instances. Given the likelihood of Type I errors in this analysis, it would be highly speculative to attempt to explain these results. Nonetheless, there is a consistent pattern here that is difficult to attribute to chance. That writing for publication is related to having supportive mothers for bright females and that not writing for publication is related to having moderately supportive fathers for bright males is a conclusion that can be drawn from these results only in the most tentative manner, but it is an intriguing hypothesis that is worth testing.

Similarly, the present finding that the variable of Income was related to three family-background variables for female subjects and that the father was involved in each case should not be ignored. That the size of one's Income has traditionally been a measure of worth in a male-dominated world of work, something that would have been especially true in the 1950s, is not irrelevant in this context. Even with recent advances in women's rights, the playing field is far from level. The role the father plays in the expectations for and the accomplishment of success among gifted girls throughout life is worth investigating, especially in those areas in which girls and women have yet to achieve parity with boys and men (see Eccles, 1985, for a particularly cogent discussion of this issue).

The issue of creativity is raised here through the self-reports of adult Creative Work (admittedly vaguely defined). One interesting finding concerns the question that asked the subjects whether they were becoming more like their fathers or their mothers. For the entire sample, only 31.9 percent of respondents reported that they were becoming more like their mothers. However, among those who reported that they had engaged in some Creative Work as adults, 75.0 percent of the males and 45.0 percent of the females reported that they felt they were becoming more like their mothers.

This is the only family-of-origin variable that was significantly related to the same outcome variable for both sexes, and this provides tentative support for a finding that has been reported by a number of writers (e.g., Albert & Runco, 1986; MacKinnon, 1975; Roe, 1975). This is the linkage of creative production with traditionally "feminine" traits and characteristics, something that has been especially noted among creative men. The fact that there was an association between Creative Work and greater rebellion against the mother and greater resistance to independence by the mother for male subjects is also intriguing in this respect.

Limitations and Conclusions

There are certain limitations inherent in the method employed in this study, some of which are discussed above. One potential problem not discussed above concerns the possibility that the items on the questionnaire from which the variables were derived could be subject to varied interpretations by the respondents. If this were the case, there is no assurance that all of the subjects were responding to the same instrument, since there may be no clear shared meaning among the diverse subjects as to what the terms mean. Nonetheless, terms such as friendly, helpful, domineering, and so on are hardly examples of esoteric jargon. These have implicit meanings among literate adults that are probably rather congruent. Verifying that each subject is defining each term according to a single shared semantic scheme is, at the least, highly problematic and probably unnecessary.

Similarly, one might argue that self-report measures are fraught with the potential for error, especially when many of the items require the subject to respond to questions about conditions that occurred three decades ago. Again, however, one could assert that such an

argument both ignores the salience of persistent family interactions whose character had many years to manifest themselves and overstates the reliability of alternative methods such as direct observation.

Moreover, the literature on postpositivist inquiry (see, for example, Borland, 1990) is replete with plausible arguments that objectivity is neither attainable nor desirable in research in education and psychology, that realities are multiple and constructed, and that the reconstruction of these multiple subjective realities is a—some would argue the—goal of inquiry in the human sciences (see Lincoln & Guba, 1985). Therefore, to argue that self-report instruments only reflect subjects' perceptions of reality, perceptions that are inferior to those imposed by an "objective" researcher, may be ontologically and epistemologically indefensible. In any case, the remembered, perceived childhood realities of yesterday's gifted children are not without interest, nor is it probable that they are without influence. Their study is likely to repay our effort.

To conclude, the results of the present study suggest that there are relationships between family-of-origin variables and self-report measures of adult success among individuals identified as gifted on the basis of IQ as children. Further, there are suggestions that there are different patterns of relationship for different areas of achievement, that there are different patterns for males and females, and that either the same-sex or the opposite-sex parent may be the more influential depending on the area of accomplishment under investigation. These findings are consistent with the still somewhat exiguous research in this area, and they point toward interesting and productive directions for research in the future.

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THE ABC's OF CURRICULUM FOR GIFTED FIVE-YEAR-OLDS: ALPHABET, BLOCKS AND CHESS?

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I am a teacher of five-year-olds and an outspoken advocate of developmentally appropriate practices in early childhood education. I feel fortunate to teach in an independent school for gifted children where we have a full-day program and are able to write our own curriculum, making periodic alterations as we see fit. Whenever possible and suitable, I allow the children's interests to drive the curriculum in my class. For instance, when someone brings in a shell collection and others seem interested, we might decide to study oceanography. Little did I know that the day Erek brought his miniature chess set to school, my pre-conceived notions about developmentally appropriate curriculum were about to be altered.

Erek was not yet five. He, along with several other students of mine, was too young for kindergarten. He opened up his little box and enthusiastically showed the chess pieces to any classmate who happened by. Soon he bounced over to me and said, "Mrs. Kaplan, can you teach me and Daniel how to play chess?"

One of the many articles I enjoy reading and have shared with many of the parents of my students is The Importance of Play (Bettelheim, 1987). In it, the author explains how crucial it is for young children to invent their own rules for a game before adults begin imposing the "official" rules on them. Knowing this, I wasn't about to push something at Erek and Daniel that would only frustrate and confuse them. "They have the rest of their lives to learn this complicated game," I told myself. "Let them play checkers!"

"Why don't you and Daniel play the game any way you would like to play it?" I suggested. I thought that would keep them satisfied.

About 10 minutes later, Erek approached me again, rephrasing his question this time. "Mrs. Kaplan, do you know how to play chess?"

"Yes, Erek, I know how to play chess," I admitted.

"I have an idea," said Erek. "Why don't you teach us the rules so we can play chess the right way?"

I finally promised to teach them a little bit about the pieces and how they move on the board --no more. I inwardly hoped that once they realized just how complicated the whole thing was, they would give up this ambitious notion and go back to something more appropriate, like the blocks. Please don't misunderstand; I was neither underestimating their intelligence, nor trying to avoid teaching them something having educational merit. I simply thought it was too early to teach four- and five-year-olds how to play chess. It seemed on par with teaching them calculus: it was out of the question.

I began by showing the chess board to Erek and Daniel and introducing all the chess pieces, demonstrating how each was able to move across the board. Soon I saw a need for visual aids. I created small posters depicting each piece and a diagram of its "home" on the board and its movement across it. As I discussed each poster with the boys, we began moving our bodies across the rug the way each chess piece moves across the board.

This looked like a lot of fun! Soon the entire class was interested in learning how to play this new game. It wasn't long before I realized it was a golden opportunity to introduce lots of new vocabulary words, such as "vertical," "horizontal" and "diagonal" and use them in a way that made sense and really mattered to the children.

I thought with dread, "What on earth have I begun?" Soon I was setting aside chunks of our Math Explorers time to discuss chess with everyone in the class. We decided that some of the pieces were "steppers" (pawns and kings) while others were "sliders" (rooks, bishops and queens). The knight, with his L-shaped movement, ended up in a category of his own. It became easy for the children to see that the queen was the most powerful, because she could move almost any way she wanted.

Once we were thoroughly familiar with the movement of each piece, it seemed only fair that I should let them have a chance to play the game. Children learn to speak by speaking, learn to read by reading, and learn to write by writing. Perhaps, I extrapolated, they will learn to play chess simply by playing chess.

We kept our poster-sized directions close by for easy reference. It became useful for me to make several L-shaped cut-outs that could be placed flat on the chess board, while being pivoted and flipped back and forth to show how the knight could move. After our first game between classmates (Erek and Daniel, of course) I was surprised at how well they applied what they knew about the movement of the pieces. They used no strategy because initially, we never discussed the object of the game. They seemed to be content just to remember whose turn it was, try to move correctly, and to capture the most pieces. I told them that, since chess was a "thinking game," they should feel free to take as much time as they needed to decide where to move, but that once they took their hand off a piece, it was the other person's turn. Despite the rules, we thought it was a lot friendlier to let our playing partner have a chance to "take back" a move even after he had taken his hand off of it.

Suddenly all my students wanted to play chess, but we had only one set: Erek's. I ran out to the discount store and bought eight inexpensive chess sets. We took all the components out of the boxes, stacked the boards on the shelf and dumped all the pieces together in a big, clear plastic container. This encouraged the children to figure out how many pieces they would need of each color and count them out before beginning a game.

As the children began to play regularly and as we

discussed the goal of the game, their own strategies began to emerge. I told them that if they put someone's king in danger, they have to say, "Check" to warn that person to move it or lose the game. Spectators would overhear, "Are you sure you want to move there?" or "Check your king; he's in danger," or "If I take your pawn, you can take my bishop so I'd better not do that!" or "I'm using my pawns to build a stone wall to stop you." One child suggested that, since we say "Check" to let our opponent know his king is in danger, we should say something like "Quack" to let him know his queen is in danger. We all thought it was a creative and useful idea, so we used it.

It became evident that we needed to do a lot of talking about good sportsmanship. We decided that if we didn't end a game by shaking hands with our opponent and saying, "Good game. Want to play again sometime?" that maybe this person would not want to play chess with us any more. We also decided that when someone asks us to play chess, we should really think about whether or not we are in the mood to be a good sport. They knew it was perfectly okay to say that they weren't in the mood. For a while I was giving out Good Sport Awards to anyone I'd see shaking hands or hear saying, "Good game. Let's play again sometime!"

We also found that we also needed to invent a rule for overly enthusiastic spectators. "You may watch, but you may not touch the pieces or give advice." "Kibitzer" became a new and meaningful vocabulary word. One day, a Kindergarten teacher from a public school who was observing our class, was surprised to see several children sprawled out on the rug, playing chess. Just as she was asking me whether or not they were actually playing according to the rules, a child approached me and said, "Mrs. Kaplan, I keep telling Chrissie I don't need advice. She thinks my rook can move diagonally and I know it can only move horizontally and vertically." The visiting teacher was amazed. As I began to encourage Chrissie to find a friend and start her own game, our guest admitted to me that she had never learned how to play chess. "You can watch our game," the child informed the teacher, "but we don't need any advice."

We continued to play chess and some of the children emerged as formidable players. They especially enjoyed playing a game with a teacher. I still remember Daniel saying, "Mrs. Kaplan, I'll play you chess. Okay?" Initially, my assistant teacher and I would play with them just to help them remember what to do. Before long we discovered that there were at least four children in the class who not only needed very little advice but could beat us on a regular basis. You can imagine the confidence it gives a child to know that through his own hard work and concentration he has become proficient enough to compete with older children, even adults.

At about this time I was approached by a parent of one of my chess aficionados. "I don't know what to do," she said. "My son loves to play chess with my husband, but my son is starting to win and my husband is not handling it well at all. It's like having two five-year-olds in the house. I hear my husband shouting, "Okay, Okay. How about three out of five?"

At this time we had a chess club at our school which was headed by our middle school mathematics teacher. Several of our children were interested in joining, but they didn't meet the minimum age requirement. I asked the math teacher if he would be willing to accept some of my students into his club. Now, he knew we were learning how to play chess in our class, but I don't think he realized how well we had learned the game. Soon the new chess club members were not only getting the opportunity to play a lot of chess, they were becoming acquainted with children from every class in our school. They were competing on a friendly, non-physical level. It was not unusual to hear a middle school student give an exuberant "Hi!" to one of his five-year-old fellow chess club members.

During the process of learning this game, my children learned a great deal about mathematics, logic, and spatial relationships. They learned about thinking hard and planning ahead. The lessons they learned about good sportsmanship carried over into other areas of their lives. They made many new friends and developed their interpersonal skills while their confidence soared.

As it turns out, my gut level feeling about the teaching of chess to four-and five-year-olds was wrong. I'm so thankful that I didn't follow my first impulse and hastily shut the door to this opportunity before our chess playing adventures had a chance to begin. This experience has taught me to remain flexible and open-minded regarding what ought to be taught to young children. It has also taught me to continue to stay in touch with my children's interests and to take advantage of their natural curiosity and motivation to learn.

I have been, however, always afraid that our math teacher would take me aside and ask why my children periodically shout "quack" while they play.

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TEACHING THINKING EARLY

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"Jimmy is in second grade. His house is about four blocks from the school. On nice days, he walks to school and home again. On rainy days and on very cold days, his father drives him to school in the car. None of Jimmy's school friends live near his house, so he usually walks home alone.

Lately, three fourth-grade boys have been following Jimmy when he walks home after school. They call him names like "Baby" and "Dummy" and "Chicken." Jimmy is afraid of them because they are bigger than he is. It hurts his feelings when they call him names. He is also afraid they will hit him and hurt him.

Jimmy has not told his mother and father about the boys. Once he disobeyed the teacher on purpose, so he would have to stay after school. He thought the boys would be gone when he walked home, but, no, there they were waiting for him. When he did get home, his mother was angry with him for being so late (Crabbe 1984)."

Every day children face situations which require them to consider many sides of an issue and make an informed decision. Learning to think clearly and solve problems is a life skill. Learning how to think (not what to think) is vitally important for children. It is estimated that knowledge doubles every 10 years and the job that a primary grade child may have after high school graduation may not even exist today. Children can not be trained for the present. They must be trained to adapt to the rapid changes that are occurring in the world. Learning how to think and make sound decisions are skills that should be introduced in the early grades and practiced throughout a child's school years.

Teaching students to think logically and creatively and to solve problems, are skills that can be taught systematically. They are skills which adapt to both school and life situations. Just as young children are taught to tie their shoes and print their names, so also can they be taught to think logically and creatively.

The Future Problem Solving Program is a year-long academic program which augments the regular curriculum with challenging materials and adapts the creative problem solving process developed by Alex Osborn and Sidney Parnes to current societal issues. The six-step creative problem solving includes the following steps:

RESEARCHING THE TOPIC: gathering information about the broad topic

BRAINSTORMING PROBLEMS: analyzing the specific situation and listing as many of the problems as possible that are related to that situation

IDENTIFYING THE UNDERLYING PROBLEM: selecting a problem that, if solved, may also lead to the solution of many of the other problems on the brainstormed list;

BRAINSTORMING SOLUTIONS: generating many possible solutions to the underlying problem;

SELECTING CRITERIA: brainstorming several possible criteria by which to evaluate the alternative solutions and selecting the five that seem most appropriate;

EVALUATING SOLUTIONS: using the five criteria to evaluate the ten most promising solutions brainstormed in the fourth step;

DESCRIBING THE BEST SOLUTION: improving on the best solution and describing that solution (Crabbe 1988).

Before any decision making can occur, information must be gathered to provide an idea base about the situation. Information can be gathered from talking to others or from the variety of media sources which are available. For example, children might be asked to try to find out the average bedtime of children in a particular grade level. The children might gather information by asking every child in that grade about his bedtime, asking a few parents about the bedtimes of their children, and asking pediatricians about the average bedtimes of children of that age. The children might compare the bedtimes for two grade levels to see if there is a difference (Crabbe 1990).

Brainstorming is a process used to generate ideas. The four guidelines for brainstorming are:

1. No Criticism. During brainstorming, all ideas should be accepted and recorded. No idea should be seen as impossible or inappropriate or too trivial or too anything.

2. Freewheeling. Brainstormers should be encouraged to freewheel, that is, to think of the bizarre, off-the-wall, even seemingly impractical ideas.

3. Quantity. One of the purposes of brainstorming is to generate many ideas. Though the results may yield many unusable ideas, there will undoubtedly also be many good ideas. Quality tends to accompany quantity.

4. Piggybacking. Piggybacking, sometimes called hitchhiking, is the practice of improving on another's ideas or of combining ideas. Often someone else's ideas may trigger an idea by another person in the group. Thus, brainstorming is a team sport (Crabbe 1990).

Some sample questions to involve students in brainstorming include:

- How many things can you think of that are green?
- What different uses can you think of for a garbage bag and a drinking glass used together?
- What are all of the things you might give a grandmother for her birthday?
- What games might you invent that use a clothes hanger?

Finding a situation about which to brainstorm is easy. Situations exist all around us which can benefit from new ideas. Have the children observe the school cafeteria during lunchtime. Begin the observations before the line begins and continue until the last student

leaves the cafeteria. Ask students to brainstorm all of the problems they can think of that are related to the situation. Then ask them to identify the problem from their list that they think is the most important one (Crabbe 1990).

From the list of brainstormed problems, the students, through discussion, need to focus on one problem --that problem which, if solved, would solve other problems on their brainstormed list. Once a problem is identified, the students brainstorm solutions to that important problem. The following is a situation about which students were asked to brainstorm solutions.

Once a list of solutions has been brainstormed, criteria must be developed to determine which is the best solution. Criteria have sometimes been referred to as "yardsticks for measuring ideas." They might also be identified as the reasons for making choices. Children might be asked to name their favorite snack foods. Then they might be told that for one week they may only eat only one of the snack foods they named. Then they will need to make a choice and tell their reasons for making that choice. The reasons they have given are actually criteria.

In order to decide which solution is the best, the solutions must be ranked. The criteria can be used to do this. As an activity to learn to use criteria, the children could be told that they are to pretend that they can buy one new article of clothing. Their choices include a new pair of shoes, a new t-shirt, a new pair of shorts, a new pair of socks, or a new sweater. They should use the criterion: Which article of clothing will last the longest? The article of clothing which they think will last the longest will receive a 5 (because there are five options; if there were eight options listed, the longest lasting would receive an 8). The article of clothing which will last the least amount of time will receive a 1, and the other three articles of clothing will receive a 2, 3 or 4 depending on their durability. The ranking should be done by children working together in a group (Crabbe 1990).

Practice Exercise:

Ask the children to brainstorm the names of television shows that they like to watch. Then ask them to pick out their five favorites. With those on the left side of a grid, similar to the one that follows. The grid below contains three suggested criteria to use in making a choice as to which game should be played; you might wish to substitute criteria of your own or the children's. Rank order the television shows according to each antenna. Remember to use only one criterion at a time, and to award the best fit a 5 (because there are five choices) and the poorest fit according to a given criterion a 1, with the other names falling in between.

After the television shows have been ranked according to the criteria, add the numbers across the grid and put them in the column called TOTAL. The television show which receives the highest score is the "best" television show --at least according to the criteria used. Different criteria may result in a different "best" choice.

In describing the best, or highest ranking, solution, the students can improve the original idea by adding to it elements of other solutions that they had considered. The description is developed through discussion. Communication skills are most important. Ideas need to be explained thoroughly enough so that others, who did not hear the group discussion, can understand and be convinced that the idea presented is truly the best idea.

	CRITERIA			
SOLUTIONS	Which television show would be the funniest?	most acceptable to parents?	most educational?	Total
1.				
2.				
3.				
4.				
5.				

The Future Problem Solving Program was begun in 1974 when Dr. E. Paul Torrance was invited to work with a group of high school students in Athens, Georgia. Dr. Torrance, well known for his work in creativity and gifted education, was concerned about student's lack of creativity and interest in the future. Using the creative problem solving process and issues focusing on the future, students worked in groups of four.

The goals of the program focus on motivating students to:

- think more creatively
- develop an active interest in the future
- improve communication skills (both oral and written)
- solve problems using a six-step process
- work cooperatively with their teammates
- develop research skills
- think critically

The future is requiring that we train our students for jobs which have yet to be identified. Therefore, the skills of thinking creatively, communicating effectively, becoming self-directed and responsible persons, learning and practicing problem solving skills, working effectively as a group, and integrating these skills into daily lives become ever so important. Building these skills in young children should lead to better problem solvers and leaders in the future.

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GREATER GIFTS THAN THESE

Susan Belgrad, Supervisor of Field Experiences, Roosevelt University, Chicago

As an early childhood educator who dabbles in the history of education, I have been aware for some time that a man named Wilhelm Froebel painstakingly created very special materials for the young child and named them "gifts." He chose this term because he viewed his materials as capable of turning the complexities of the universe into comprehensible activities to delight and inform the young and eager minds which interacted with them. In the earlier part of this century, kindergarten teachers regarded the "Froebel Gifts" as the principal materials of the kindergarten curriculum. Since becoming acquainted with the Froebel blocks nearly ten years ago, I have enjoyed rich opportunities to share these materials with teachers and children, in preschool through third-grade classrooms. Through these experiences, I have come to realize that appropriate education through exploration of well-designed materials is a gift to which every child is entitled. In this article, I will share a part of my journey toward comprehending the power of these materials.

One day during the winter of 1988, my son came to me for help with his third-grade science workbook. For this particular assignment, he was asked to complete sentences which dealt with the subjects of work and energy. Although he had read the science book and had received direct instruction of the facts and information in his text, he was very confused and certain that he had no understanding of the concepts. After briefly glancing at the page, I immediately thought of the second of the Froebel Gifts, which my son and I had often "played" with during the four years since we acquired them. "David, you really do know how to answer these problems!" I exclaimed.

"I do?" he asked, looking at me incredulously.

"Yes," I responded with certainty. "Let's go get out our Froebel Gifts. "

Together, we went to the shelf in his room where the materials were stored. I directed him to take out the second of the Gifts. As he went to the shelf I felt very pleased about the endless hours he had spent over the years, playing with and exploring the multitude of possible constructions and actions these replicated materials suggested. I was eagerly anticipating an important "test" of Froebel's principal notion, that a child's early play with concrete objects provides the foundation for him to form quite complex—even abstract—notions of how things work.

My son removed the rectangular box with the sliding cover which holds the three maple "forms of nature," and two dowel rods and a grooved crossbar which enable the "player/worker" to construct a platform that will suspend the sphere, cube, and cylinder that comprise Gift number two. Each of these forms is ingeniously fitted with small eyelets in strategic positions, to allow them to be intersected and threaded with string for suspension from the crossbar. They are also pierced at strategic points, to facilitate insertion of the small rods which intersect them.

"Let's begin by looking at this problem together," I suggested. We read the problems and then proceeded to simulate them upon the blocks before us. In response to the question of what one would use to place a heavy barrel on a truck bed, we used the box lid as an inclined plane, to roll the cylinder onto the box top. To answer the question as to how one would dislodge a heavy crate from its position on the floor, we placed one of the piercing sticks through the cylinder and used it to pry up the cube in a "lever" action. My son was elated to discover that he had used these actions over and over in the past, but had not identified the principles involved or their language and application in the "real world" outside his playroom. I, too, was excited to see the empowering nature of these materials, to not only unlock secrets of the mechanical world, but to give the child an incredible feeling of mastery and competence.

My son looked up at me and asked, "Could I learn about everything this way?"

I responded, "Maybe so. We sure could try."

As I tucked him into bed that night, he said wistfully, "I wish you could come to school and show the Gifts to my teacher and friends. I bet they would like to know that learning science could be so cinchy!" It was an excellent idea and I assured him that I would write a note to his teacher and volunteer to bring the Gifts to school during the next science lesson. The next morning, we wrote a note to his teacher and he returned from school with an invitation for me to visit with my Froebel blocks the following afternoon. I already felt that my son and I had received gifts from these materials, but much more lay ahead.

The next afternoon, I prepared to take the Gifts to my son's school. Although I had extensive experience introducing the materials to preschool, kindergarten and first-grade children, I was intrigued with the possibilities they would provide for third-grade children. I considered some age-appropriate ways to introduce the children to how and why these materials were created, but decided instead to let the children's own interests guide me.

As I arrived in the classroom, I was pleased to see that my visit had been prepared for and that the children were eagerly awaiting the Gifts. The class science lesson had the children reading about gravity, friction, and force. Since my years of introducing the Froebel materials to children had afforded me extraordinary knowledge about the "mechanics of physics," I knew to begin by proposing that, when an object does not have any type of force operating upon it, it is "centered" or "at rest." I suggested that even children can at times be "centered." To do this experiment, I explained to their aroused curiosities, I would need them to seat themselves comfortably on the carpet and relax, while placing their entire focus upon the sphere which I dangled from the second Gift apparatus. It was amazing to see their excitement gradually become contained as they watched me twist the sphere several times, until the string from which it was suspended became bundled up with tension. I quietly reminded them to watch the action of the sphere and string until it was complete. The classroom of 23 children fell silent as I released the

sphere. It spun and dropped, increased velocity, paused briefly, then reversed its direction and repeated the sequence. All eyes followed the sphere, while it seemed that all breathing suspended.

Finally, I spoke. "I am now going to apply a form of force to the sphere. Watch what happens." I lightly touched the sphere intermittently for several seconds, which brought the spinning to a slow, steady halt. I waited until the sphere had ceased moving and then said softly, "Like each of you, my sphere is now centered—it is at rest, with all of its energy contained." With that, their excitement was again unleashed and they were eager to communicate their observations and impressions. To explore answers to their questions about friction, we tried suspending the cube, and they noticed that its spinning was more cumbersome than, and did not last as long as, that of the sphere. They understood that the friction of my finger was a force which slowed the sphere, and that the force of gravity pulled the tension from the string. One student noted that the spinning cube at the height of its velocity created an illusion of a cylinder. Through further discussion, the class agreed that it was friction against the angular sides of the cube which caused its "ride" to be slower and shorter than that of the sphere. I chanced an abstract question as to what would happen if my cube was left spinning for hundreds of years: Would it stay a cube or become like another form? The children volunteered hypotheses that it would eventually wear down to the shape of a sphere—"just like all the planets!"

Now that they were hooked on these concepts, we moved on to the operations which David and I had practiced. The hour passed quickly and the time arrived for my departure. The children were disappointed that we had to stop, so I made arrangements to leave the Gifts behind and to send the remaining materials to their teacher. I left the classroom feeling exhilarated, with concrete affirmation of my belief that children require hands-on activities to unlock their powers of exploration, discovery and knowledge acquisition. My son returned home that afternoon with an even greater gift for me, in the form of "letters to Dr. Belgrad." They were—and still are—charming, poignant reminders that we must treasure children's natural curiosity and inner drive to know, and that learning is truly a gift which we must give to one another.

Another gift which I have carried forward from this experience is the knowledge that learning is a natural occurrence for children. We need to respect this inherent ability by creating enabling experiences, using common objects and occurrences in the home and school. Children can later transpose the information gathered from these experiences, and apply it to their particular environments. Rather than diminish and burden their spirits of inquiry and their natural love of learning by imposing abstract and representational information, we need to choose dynamic, three-dimensional learning experiences as a first option and gateway to learning.

The following are selections from the children's heartfelt expressions of gratitude for my bringing to them the simple experience of the Froebel Gifts.

Dear Ms. Belgrad: We loved it when you came to our class. We learned some new things. When can we play with the objects? We hope you come back soon.... Sincerely, C. E., The new kid.

Dear Mrs. Belgrad: It was a pleasure having you. You are a very interesting person. Thanks to you I might get a hundred on my test. Your friend truly, M. W.

Dear Mrs. Belgrad: Thank you for coming to our class. We learned alot from you. I was glad you came because I didn't know the answers to my work book. Sincerely, P.

Dear Mrs. Belgrad: Thank you for coming to our class. I was glad to see that grownups play with toys too. Love, P. W.

CREATING A NURTURING CLASSROOM ENVIRONMENT

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Enthusiasm, and joy which characterize childhood are priceless, bringing with them an unbounded imagination and curiosity. As parents and educators, we desire to grasp this valuable time for each of the children in our care, and send them "flying." What a challenge and responsibility we have to enable each young mind to reach its potential. Our dream is that they will find joy in their world, discover a purpose for their existence, hold on to all that is lovely and deserves praise, and be ready to handle whatever comes their way. The question is, what can we do to make this dream come true?

An enriching and nurturing environment is needed for our children. Kindness, appreciation, and encouragement must also be an integral part of the learning process. A challenging academic environment, where children are encouraged to share their ideas, and feelings, is indeed a special place for expanding minds. Children who are confident of their value and worth, and who are encircled by caring adults and peers, can be comfortable in speaking out and sharing their personal thoughts and feelings.

Highlighting individual strengths is beneficial in building the spirit and character of children and effective in drawing out their special qualities. Attention should be given to the child who is exceptionally kind or helpful, as well as to the child with amazing skills in math, physical education, creativity, reading, acting, or art.

Responsible learning means even young children take ownership of their learning by contributing materials to the projects and activities in which they take part. This may involve bringing in a bag of something interesting to smell for a senses lesson or a bag of macaroni for an advanced counting lesson by hundreds

and thousands.

Lessons from life offer opportunities to develop relational skills. A sensitive parent or teacher allows time for impromptu discussions and discoveries during each day as situations arise. Many of the most important lessons preschool and kindergarten children learn are through their interactions as they are playing and "working" together. A teacher who is tuned in to what the children are sharing with one another can interact in a way that encourages children to think through situations, anticipate consequences, and solve problems -- everything from how you could communicate to someone when they won't listen to you, to what to do if a fire starts in the kitchen.

A firm foundation in the education of a young child needs to be carefully prepared so that it remains focused on that which is most important in the overall picture. The following areas will best prepare children for purposeful living:

VALUES FOR LIVING

1. Appreciating and respecting leaders, family and friends
2. Seeing through the eyes of others and having compassion for their views, growing in sensitivity, acceptance, and concern for their well-being
3. Developing skills in building relationships and communicating effectively
4. Pursing and expressing positive attitudes, thoughts, and actions
5. Understanding personal worth and value
6. Recognizing and developing unique individual abilities and sharing them freely with others
7. Building confidence and enjoying self-expression
8. Channeling energies, developing self-discipline with a realization of natural consequences
9. Establishing goals, and implementing plans
10. Handling stress caused by frustrations, problems, and mistakes
11. Accepting responsibility and meeting deadlines, developing an awareness of standards and obligations in life
12. Making effective use of time
13. Becoming independent in learning, developing an inward motivation to pursue learning experiences

A caring classroom can be developed by discussing values for living through brainstorming games and activities that encourage the evaluation of consequences for the choices children make. For Valentine's Day, I bring a stuffed penguin and a penguin bag full of mystery situations enclosed in individual heart bags. Children are instructed that, although penguins have swimming and waddling school in the South Pole, young penguins are sent to our school for kindness lessons. When a child holds the stuffed penguin, it is his/her turn to explain to the penguin a solution for one of the mystery situations. The following mystery situations could be used: What they would do if...a friend was bossing you, a friend didn't want to be your friend today, or a friend broke your toy?

The following includes some of my favorite classroom activities that encourage children to think about who they are and how they are special:

1. With younger students, "Pack Your Own Suitcase" creates an adventure where children pretend that they are taking a trip into space and are allowed one suitcase full of treasures. Each week the assigned student brings in their suitcase packed with favorite things, games to play, stuffed animals, collections, and pictures of special people. Parents, siblings, and grandparents may enclose a care letter to the child reminding him of how he is loved, referencing the child's special qualities.

2. Younger students enjoy thinking up words to describe a friend and having their ideas written on file tabs to stick on their friend's outfit for the day. How special a child feels walking around with words to announce that he is kind, cute, a great builder, a good "cleaner-upper," a nice hugger, and a pretty singer!

3. Primary students enjoy making warm fuzzy pins out of yarn pompons with moveable eyes, hearing the popular story about warm fuzzies, and then writing "warm fuzzies" which are kind compliments and messages to each other. These notes of encouragement are placed in a little mailbox, and the messages are delivered for a special reading time.

4. With older primary students, designing an "inside/outside box" can be a thought-provoking experience, especially when an autobiography is included. Instructions might read as follows:

We can't wait to hear about the real you! Your mission is to design an inside/outside box that is decorated to tell us about the real you that we might not have met yet.

Fill the outside with magazine pictures, drawings, or photographs showing things about you -- what you like to do, places where you like to go, things you like to eat.

Fill the inside with words or phrases that reflect what you are like inside -- your dreams, your thoughts, your feelings about things, your character.

Don't forget to include your autobiography inside. Include some of the exciting, frightening, unusual, or funny situations that you have encountered. Also write about your dreams for your future. Please remember to tell us about how you felt in the different situations you encountered, and let us know if these experiences changed the way you looked at things. Be honest with what happened, while writing in a fashion that will keep us interested.

5. Older primary students enjoy writing "cheerful charmers" which are sincere, supportive compliments to class members written on paper bordered with a snake. These notes are shared with the group. Each child has a "charming packet" that includes a class checklist to keep track of who has been written to, so everyone is equally encouraged.

At the end of the year, it has become a tradition to give a couple of awards to each child to encourage his/her uniqueness. Some of these awards have included: The Research Rascal (The Leaping Librarian Award), Mr. Math Book Muncher, The Amelia Bedelia Good Helper Award, The Curious George Award, Mr. Determined Detective, The Darling Diplomat (The Patient Peacemaker Award), Ms. Fix-It (The Expert Engineer Award), Mr. Quick Feet (The Quick as a Cricket Award), The Terrific Transformer (The "Wait-I've-Got-a-Better-Idea!" Award), Tigger the Thundering Thinker Award, the Workbook Wonderwoman Award, and The "You've Come a Long Way Baby" Award.

Reading and Writing

Encouraging creative expression is a motivating way for children to learn to read. Writing about preschool and kindergarten artistic or constructive creations shows children the value of words. Kindergartners enjoy copying the teacher's writing that represents what they have to say. First-graders can even learn to read by simply practicing reading the sentences and stories they compose individually or as a group. Group stories can be written on lined charts for saving and reading together. Copies can be made so children can have word searches and practice reading at home.

In word and sentence boxes made from shoe boxes, children can collect pictures of the words they want to know or of the sentences they create about their pictures. Old catalogs and National Geographic magazines hold a treasure of interesting pictures for the occasion.

Art projects are terrific springboards for young writers. Big books can be made by writing children's ideas down in large print as they sit close by, sharing thoughts about their illustrations. Older primary students can write their own stories that they file in their writing workshop folders.

Outstanding literature provides great momentum for a child's desire to read and write, and it lays the foundation in language skills and creative expression that is necessary for successful reading and writing. When the lives of authors are studied, children learn to relate to them as real people, and they catch a glimpse of the potential for their own achievement someday.

I usually have a large collection of books from my local library available in the classroom. By selecting books from several authors with varied styles, the children have the opportunity to compare the techniques of different authors and illustrators. Reading outstanding literature encourages the development of a child's own unique style of communicating. A few of my favorite authors include: Ezra Jack Keats, Robert Krauss, James Stevenson, Dr. Seuss, Steven Kellog, Jack Kent, Tomie DePaola, Tana Hoban, Shel Silverstein, Margaret Hillert, Judi Barnett, Leo Lionni, Brian Wildsmith, Quentin Blake, Ann Donegan Johnson, Lorna Balian, Carol Greene, Eric Carle, and Joanne Marxhausen.

Providing choices is an important part of continually stretching young minds. Giving children "choices within my choices" provides a structure for instruction, while at the same time providing an avenue for creativity.

To learn food words in a first-grade classroom, children can design restaurants with special features that are sure to attract customers and create delicious menus that are drawn on paper plates. Each child writes about his restaurant's unique features and prints out the menu for their customers to read about under their sample plate of food. Older primary students may enjoy having many different options to choose from for their "Book Beast Binges"(book reports).

The following choices might be included:

CARTOON CAPTIONS - Create a cartoon for a chapter or section of your book. Your goal is to convince someone to keep on reading. Give a clue to the ongoing plot.

BOOK COMMERCIAL - Plan to advertise your book by preparing a radio or TV commercial. This should include a catchy jingle, slogan, simple song, or dialogue. Write this in script form.

CHARACTER DIARY - Write sample pages from the diary of one of the main characters, focusing on two important events that took place. Write their reactions to the situations.

POSTER AD - Design a colorful and visually appealing ad that is sure to sell your book. Describe the highlights of your book in a creative fashion, with art work included.

TAKE A STAND - If your book discusses a controversial issue, write a convincing statement (several paragraphs) to support your personal beliefs. Explain clearly why you believe the way you do.

LETTER TO THE AUTHOR - Tell the author what you liked about the book you read and share your ideas of what you might have changed had you written the book.

TRIVIA TRACK DOWN - List at least six interesting facts that you learned from your reading. Be specific by giving details.

NEWSPAPER CRITIQUE - Write a column for the newspaper giving potential readers a synopsis of the story line, a description of your favorite part, your opinion as to whom it would most appeal, and your reactions (if you like it or no, and why).

CHOOSE YOUR OWN ENDING - Write a new ending to the book telling what you would like to have seen happen.

POEM - Write a poem to capture the main idea of the story, focusing on the lessons that can be learned or ideas that can be pondered.

FRIENDSHIP FILE - Analyze the characters or people that you read about in terms of their strengths, weaknesses, and interests. Tell us what kind of a friend they might be. Would you want to invest in their friendship?

A BRIGHT IDEA - Think up another way you would like to write about the book you read and have your option approved by your teacher.

Creative and critical thinking are essential tools that stretch imaginations, develop problem solving skills, and heighten the awareness of how our actions affect others. An adult who displays sincere enthusiasm for research and discovery, will watch the effect it will have as a springboard for productivity with children.

An amused mind is a mind set in motion, ready to produce new ideas and find solutions. As Plato once said, "Do not then train youth to learning by force and harshness, but lead them to it by what amuses their minds so that you may discover the peculiar bent of the genius of each." By amusing young minds, we discover the unique abilities each child possesses.

EDUCATION OF YOUNG GIFTED CHILDREN

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Designing and delivering appropriate education for young gifted children requires knowledge in the areas of both early childhood and gifted education. These children have special needs that cannot be met in regular preschool programs or primary classrooms. Gifted young children will find the instructional activities in such programs unchallenging because they are designed to meet the needs of the average child. Programming for gifted young children does not imply rote learning, repetitive drills, or isolated skills taught with workbooks and flash cards. It does not imply that gifted children should be given no direction or instruction or allowed to play "games" all day. It does imply learning through positive interaction and free exploration of self-selected materials and activities. In gifted education, content, process, and product are equal components.

Gifted young children must be identified in order to be appropriately served. Identification measures include individual standardized intelligence tests, such as the Wechsler Preschool and Primary Scale of Intelligence, biographical data (case study), parent nomination, professional judgment, formal and informal observation, performance tests, work samples, checklists, and rating scales.

There are many problems concerning the education of young gifted children. The major problem is that there are too few programs specifically designed to serve these children. Lack of appropriate teacher training is largely to blame. Most early childhood teachers do not have the training to enable them to appropriately challenge these bright children. Teachers of older gifted children do not necessarily know how to adapt their instructional techniques to meet the needs of younger gifted children. Providing information about gifted young children to the general public and teachers is one way to mitigate these problems. Knowledge and understanding supply the means by which young gifted children are given maximum opportunity to live up to their potential.

This paper provides a basis for understanding young children and gifted children. Included is a review of the historical backgrounds of developmentally appropriate practice for young children and gifted education. Also covered are the general age characteristics of young children and specific qualities that indicate giftedness. Finally, there is a chart that shows how a program can be designed to meet the needs of a young child who is identified as gifted.

DEVELOPMENTALLY APPROPRIATE PRACTICE

Social Need for Quality Early Childhood Programs

Foster (1967) suggests that the goals of any educational program must be established before the program is begun, and a theoretical basis selected to aid in establishing program goals. Foster urges educators to carefully consider the appropriate approach to be used in educating young children in our democratic society. He concludes by suggesting that there will be a "comprehensive overhaul of nursery-kindergarten-primary education" (p. 13) if educators allow their attention to be focused on important matters.

Schweinhart and Weikart (1985) suggest that superior quality preschool programs will have immediate results as well as long-term positive effects on both individuals and society. Schweinhart, et al. (1982) document these benefits as reduced costs of later education, improved earnings potential, and "decreased costs for welfare assistance and crime" (p. 552). The authors emphasize that only quality programs will produce the desired results. This quality comes from such ingredients as "parent involvement, programmatic leadership..., enthusiastic teachers, articulated curriculum. . ., and sound in-service training programs," along with feedback and evaluation (p. 553).

Bronfenbrenner (1985) warned about the "unravelling of the social fabric that sustains and connects the child's three worlds of school, family, and community" (p. 10). He predicted dire consequences unless we provide places where children are kept safe in a warm and responsive atmosphere that fosters language development, social skills, and cognitive growth. Young children are fragile. If they are not provided with compassionate care and quality early education, there will be catastrophic, overwhelming, and perhaps irreversible effects on children and society. Statistics recently published by the Children's Defense Fund (1991) show that this situation is already prevalent. One of the chief messages of the document is that America lags behind other industrialized nations in caring for children. One way to counteract this child care gap is to provide superior early childhood programs based on knowledge of how young children learn. Developmentally appropriate practice is the cornerstone of excellence in early childhood programs.

Background

Developmentally appropriate practice as policy for the design of early childhood programs is derived from the work and expertise of researchers, program directors, parents, and teachers. The largest professional organization in the field, the National Association for the Education of Young Children, published its position statement on Developmentally Appropriate Practice in 1987. The writers of this document relied on the work of past and present researchers and practitioners who have made major contributions to our present knowledge base. This document is thus the springboard for the major and comprehensive overhaul that Foster (1967) predicted 25 years ago.

Definition

The concept of Developmentally Appropriate Practice has "two dimensions: age appropriateness and individual appropriateness" (Bredekamp, 1987, p. 2). Age appropriateness assumes orderly progressions of growth that are universal; that is, all humans go through the sequences in a predictable fashion. The domains of

developmental sequence are the physical, emotional, cognitive, and social. One domain frequently overlooked, but relevant to education of gifted youngsters (as it should be for education of all young children), is what Clark (1988) calls the "intuitive domain," which "is involved in initiating of insightful acts and in creative activity" (p. 267). These sequences are the paradigm by which teachers can plan experiences within the learning environment. Individual appropriateness recognizes that, within these sequences, each child is unique. There are variations in pattern and timing of the sequential progression through stages. Each child is also a product of the interaction between his nature and nurture, and possesses singular, distinctive, and varying levels of growth, strengths, experiences, and interests.

"A major determinant of program quality is the extent to which knowledge of child development is applied in program practices" (Bredekamp, 1987, p. 1). This knowledge base is the result of years, indeed centuries, of work by theoreticians, researchers, and practitioners. The recognition of the relationship between program design and implementation and research is the proper basis for the design. This is both the policy statement and major goal of Developmentally Appropriate Practice. The content of a program (curriculum), and the experiences, setting, and instructional methodology fashioned for the children will flow naturally from theories of learning. Thus, a program will have a solid foundation and framework, as well as attainable goals, rather than a haphazard design and unclear or unattainable goals.

Some of the most important theories of learning for early childhood education and gifted early childhood education are those of Jean Piaget and Jerome Bruner (Cognitive Development), Lawrence Kohlberg (Moral Development), Erik Erikson (Psychosocial Development), Ivan Pavlov (Classical Conditioning Theory of Learning), B. F. Skinner (Operant Conditioning Theory of Learning), Albert Bandura (Social Learning Theory), Carl R. Rogers and Abraham Maslow (Humanistic Developmental Theories), J. P. Guilford and Paul Torrance (Creativity), J. S. Renzulli and Barbara Clark (Gifted Education). These theories all have general constructs and implications for the educational environment of young children; each also has unique strengths and weaknesses.

HISTORICAL BACKGROUND

Developmentally Appropriate Practice

Several theories and philosophies have contributed to and "furthered our understanding about child development" (Peck, McCaig, & Sapp, 1988, p. vii). A number of theories have provided a basis for curriculum designs and program instructional methods. As we learn more, programs and methods once used extensively in the past have fallen from favor. There is one method that is as appropriate for young children today as it was in the past. It is the concept of play as the work of young children. Frederic Froebel (1782-1852), called the "Father of Kindergarten," recognized the impact of play on learning. Froebel's philosophy of education was strongly influenced by others, including Rousseau, Pestalozzi, and Herbart, who were themselves influenced by other great thinkers and writers. Montessori, Piaget, and Gesell incorporated Froebel's teachings and beliefs into their philosophies of education. Many of Froebel's tenets are still held today, while others have been generally rejected or modified. Froebel was a stage theorist and believed that the preeminent activity of the childhood stage is play. He entered a plea for the use of purposeful play in the education of children believing that, if school play is to have value, it must not be pointless. Employment of materials requiring orderly sequence in the feelings engendered and in the activities exercised, affects the outcome of play-directed behavior. This is similar to Montessori's concept of the prepared environment, which is an environment in which children interact with materials given them for specific purposes and where the children are free to educate themselves. Self-education happens because the child is actively involved and exercises freedom of choice (Morrison, 1976). The child as both teacher and learner found its culmination in open education and "free schools" in the late 1960's and early 1970's.

The notion of play correlates with the view of Piaget and others that learning involves both interaction and construction (Labinowicz, 1980). The child constructs knowledge, or mental frameworks, through the process of purposeful interaction with his world. Thus, the job of a teacher (at home and at school), is "building upon a natural process of development rather than forcing strange or alien tasks on the child" (Moursund, 1976, p. 131).

Adults have created an unnatural distinction between work and play in young children. Young children do not "play or work, they simply do; they experience and learn" (Hein, 1973, p. 9). This artificial distinction, which begins early in school and becomes, almost without exception, the rule by second grade, produces aberrant learning rather than legitimate learning. Humans are natural learners. Subversion of this spontaneous, instinctive, and intuitive drive occurs when children are not allowed to learn in an appropriate and individualistic manner. Froebel recognized this, as have others who came before and after him. Many have considered education to be a process of creative self-development that comes from an inner drive and spontaneous self-activity. Learners "do"; there is no separation of doing, playing, and working.

Other concepts are also important. Froebel, Piaget, and Dewey believed that a child truly develops only when actively creating, that the child must learn by doing, and that development unfolds according to a predetermined pattern or sequence with well marked stages. Piaget and Gesell emphasized the principle of continuity of development, stressing that strengths at each stage must be reinforced. Otherwise, difficulties created will be impossible to rectify later. Many psychologists and educators today, such as David Elkind, are warning about the dangers of trying to hurry children through life. Froebel, Piaget, and Montessori all agreed that education should adapt to the pupil's nature and needs, and should enlist the pupil's cooperation. This concept is a basis for today's special education and the individualized education program. Froebel, Piaget, and Vygotsky all dealt with the development of language, although there are differences in the order and

importance each assigns to language learning. Froebel and Piaget, who have addressed the issues of readiness, agree that a learning activity should take place only when the child is ready for it and needs it; however, Froebel believed that readiness is a condition of the child's inner nature (bequeathed by God), whereas Piaget believed that readiness is a condition of the child's curiosity, interest and experiences. Froebel advocated open education, progressive education, and humanistic education. He believed that the aim of the teacher is to see that the child's development is in accord with the original and logical course of human development. The ideal education, in his opinion, is passive and non-interfering. He believed that most failures in education stem from neglecting or preventing the development of each child's personality. Arbitrary and willful interference with the child's development will cause a distortion of the child's inner nature. Finally, Froebel perceived the significance of socialization as a basic principle of teaching. This perception has had a major impact on today's policy of developmentally appropriate practice.

Gifted Education

Gifted education also has historical roots. An example is the Terman Study (1925), a longitudinal study of the mental and physical traits of gifted children. A narrow definition of giftedness, that of high IQ alone, was the basis for inclusion in Terman's study. Since his study, researchers have found evidence of multiple intelligences. The seven intelligences include logical-mathematical, linguistic, musical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal (Gardner & Hatch, 1989). The definition suggested by Renzulli, Reis, & Smith (1981) includes high ability, high creativity, and high task commitment. Guilford (1976) includes, as does Torrance (1976), four components in the definition of creativity. These are: (1) *fluent thinking:* generation of a number of relevant thoughts and ideas; (2) *flexibility:* variety of kinds of ideas and ability to shift categories; (3) *original thinking:* to think in novel or unique ways to produce unusual, clever, and not obvious responses; and (4) *elaborate thinking:* to stretch or expand on ideas, to embroider and embellish thoughts and add to properties of objects.

Lack of money, lack of a federal mandate for gifted programs, and the often encountered resentment toward those labeled gifted, are serious problems, as is the lack of teacher training. Many early childhood teachers are unprepared to meet the challenges presented by a precocious youngster in a regular classroom. Teachers trained to provide instruction for older primary grade gifted children are perplexed when confronted with a very young child who can discuss quasars and name and describe almost every kind of dinosaur, but who has trouble holding a pencil! An integrated approach is necessary for those who teach young gifted children.

EDUCATION OF GIFTED YOUNG CHILDREN: AN INTEGRATED APPROACH

Education of gifted young children requires an interdisciplinary, consolidated approach that unites principles of Developmentally Appropriate Practice with concepts and practices of individualized instruction. As Smutny and Blocksom (1990, p. 32) state, "Gifted education for preschoolers should be firmly grounded in the developmental tradition of early childhood education." A teacher of a young gifted child must be very conversant with the theoretical, philosophical, and empirical basis of early childhood education, special education, and programs specifically designed to meet the needs of gifted children. It is necessary for the educator to know the developmental characteristics of young children. Programs for gifted children are based on the concept of differentiated curriculum, and the curriculum and instruction must be essentially different from the curriculum and instruction in the regular classroom. Content, process, and product goals are interrelated and integrated. The educator must also be cognizant of the curriculum requirements of the school system and the state.

There is basic information that is applicable to young children and gifted children. The section below, *Behavior Characteristics of Young Children*, lists behaviors of young children by age group. The next section, *Theories of Learning*, lists relevant theories of learning applied first to young children and then gifted children. These are ecumenical characteristics and individual variations will occur. *The Relevant Educational Components* lists provide a synthesis of specific characteristics, general curriculum components, specific instructional guidelines, the teacher's role, and characteristics for young children and gifted children. The lists are side-by-side, to demonstrate the relationship between educating young children and gifted young children. The side-by-side structure facilitates analysis and evaluation. There are two cautions about the lists: (1) the lists are meant to be cross-referenced and there are many items that belong on both lists, and (2) the lists are not all-inclusive, although major features are included.

BEHAVIOR CHARACTERISTICS OF YOUNG CHILDREN

Four-year-old Children

A four-year-old is exuberant and has an expanding sense of self that shows up in bragging and boasting. This child is developing a strong sense of family and home and has a great pride in mother. There is a lot of boasting about the parents. This sense of family shows up as a conviction that the family's way of doing things is the right way and the only way. A four-year-old is selfish, rough, and impatient, especially with younger siblings, and is a nuisance to older siblings. There is a great deal of tattling.

A four-year-old is very conversational with friends, enjoys silly language, and tells very tall tales with little basis in fact. This is the peak age for imaginative verbalization, and this age has trouble distinguishing between reality and fiction. Four-year-olds love to see their names in print and they love money.

Five-year-old Children

A five-year-old is less effervescent; the greatest desire in life is to be good. A five-year-old exhibits obvious signs of maturing and is usually healthier due to a more highly developed immune system. Home and closeness to mom mean a great deal to a five-year-old, as indicated by a desire to be near mother, helping her and talking with her. A child of five tends to confine or restrict activities and kindergarten can provide needed

expansion. A child this age wants to be told what to do, wants to obey, and wants to help. Five-year-olds anticipate the time when they can go to kindergarten, as long as they know that their moms will be at home waiting for them to return from school.

High noise levels, large groups of people, and massive objects can make a five-year-old feel engulfed. Thus, five-year-old children can feel overwhelmed by public transportation, where they are likely to be confronted by all of these factors. A five-year-old is ready for group activities and the intellectual challenges that school can offer. At this age, the child is aware of new words and will ask their meanings, listens well and wants to carry out instructions. A five-year-old may appear shy with strangers in a learning situation, even to the point of refusing to answer questions. A five-year-old is not as boastful as a four-year-old and will accept limitations on abilities. Knowledge of letters and writing style is highly variable. The five-year-old prefers gross motor activity when outdoors. Indoors, a five-year-old prefers to play with toys, followed by some type of creative activity.

Five-and-a-half-year-old Children

Change is the operative word, as the cooperative five-year-old becomes noisy, demanding, argumentative and bossy. When interacting with this child, strategy--not open warfare--is required, since new, uncontrolled, unmodulated emotional forces are welling up. Adults must have a certain amount of detachment, because the shift is from "I love you" to "I hate you." Children who are five-and-a-half are acquiring a new stamina, a new ability to stand up for themselves, and an ability to express themselves freely. This child knows how to carry out commands after initial instruction. Five-and-a-half-year-old children are fun to teach because they are developing an easy give-and-take. They are less likely to show the extremes of their personalities at school, but will do so at home. The five-and-a-half-year-old who is cooperative at school, may be the opposite at home. Indoor play, both at home and at school, is still centered on objects and toys. Outdoors, the preference for gross motor activity continues.

Six-year-old Children

Six-year-old children hunger for praise and desire accolades and approval for everything they do. At this age, there can never be enough praise; copious amounts of genuine admiration will not "spoil" this child. He sees himself as the center of the world as he gradually detaches from mom. He may be considered selfish, wanting the biggest piece, eager for his turn, wanting to be first. A six-year-old does things with an impulsive enthusiasm that can be contagious, and is a tangle of outstretched arms and legs. He may use his enthusiasm positively and be eager to learn in school; or he may not, and be considered a disruptive element in the classroom. The rambunctious six-year-old with improperly channeled eagerness may become the class clown, distracting others. Often, a six-year-old will run wildly around the house when returning from school, crying or picking fights. This release of tension suggests that, although he may no longer need an afternoon nap, a rest period in early afternoon is often very wise.

A six-year-old may exaggerate and will sometimes tell imaginative stories of terrible treatment at school. He does not sit quietly, loves to climb, will frequently chew fingers, pencils or clothes, and will clear his throat frequently. When great insight occurs in his active mind, he may shout a response such as "Oh!" and accompany it with hand gestures and sweeping eye movements. Indoors, creative activities, imaginative play, and playing games are favorites.

Seven-year-old Children

Seven-year-olds yearn for privacy and can be very happy when alone. They may complain vociferously that things are unfair, but most often will withdraw and take out discontent internally. At seven, a children's fears are predictable and often hard to shake, driving others to distraction. They often worry about being late, since they are beginning to be aware of the clock and time. They may have trouble finishing things but, since completion is their main interest, may work at an activity until exhausted and frustrated. A seven-year-old must be given stopping points and limits that are within his power to sustain. Occasionally, a school task can be taken home for completion as long as it is of reasonable length. A seven-year-old child prefers to be last in line, which is probably related to the need for closure.

A typical seven-year-old loves to draw, especially with a pencil, and precision and action characterize his artwork. He loves to write, doesn't rush, and is a perfectionist. He works laboriously and tries very hard; therefore, tasks may take longer than anticipated. He prefers to work at a desk or at the chalkboard, which is a real treat, although the transfer of work from the board to paper is an onerous task. A seven-year-old has a new intellectual awareness and "think" is a favorite word. He may call his brain "the thinker" and think so hard that the thinker hurts, and may even complain of a headache after an especially hard day of thinking. This child craves to get 100% and feels anything less is unworthy to be taken home. As a result, many papers are "lost" or torn up on the way home, but perfect papers are proudly displayed.

A seven-year-old shows good control in many areas--control of temper, control of aggression, and control of movement and voice. A child this age is very sensitive to being "yelled at." When writing, his free hand may form a tight fist, indicating that the writing task is too demanding. He makes many mouth noises while working, and when concentrating may sweep the eyes upward or to the side. A seven-year-old can still find a full day of school exhausting. He may develop strong emotions for a teacher, or a classmate of the opposite sex. He will often tug at teacher's clothing to gain attention so his request can be whispered in the ear. He may be more dependent on the teacher than is sometimes apparent. When the teacher responds positively to and smiles at a seven-year-old, the child is indeed happy! Most seven-year-olds are very sociable and enjoy activities with parents, siblings, friends, and classmates. Gross motor activities are favored by the seven-year-old child; at recess they can be seen running with abandon around the playground.

THEORIES OF LEARNING

Young Children: Stages of Development

Psychosocial: Initiative vs. Guilt (4 to 5 years): The child must be given latitude to explore and experiment. Restriction may produce guilt and doubt about abilities.

Moral: Morality of Constraint, Preconventional Morality (up to age 10): Rules are external and imposed by an outside authority. Rules are strict and literal and must be blindly obeyed, with no allowance for motives or intention.

Cognitive/Preoperational (2 to 7 years): Prelogical and representational stage during which the child's thinking is no longer tied to external actions, and thinking is becoming internalized. Forms of internal representations that emerge at this stage are imitation, symbolic play, mental imagery, and language. There is a rapid development of language.

The limitations during this period include irreversibility (inability to mentally reverse a physical action to return an object to its original state); centration (inability to mentally hold changes in two dimensions at the same time); and egocentrism (inability to consider another's point of view).

Social (5 to 7 years): Feelings of empathy develop, as do the beginnings of conformity. Peer criticism for physical, intellectual, and socio-cultural differences begins during these ages. Peers become increasingly important, but adults remain the primary source of social guidelines. Play groups and friendship groups are small, forming and dissolving quickly. The teacher is an important influence on the child since the child is aware of and influenced by the teacher's social attitudes and values. The teacher's affection and approval are important for achievement, positive peer interaction, and self-esteem.

Physical (5 to 7 years): Small muscle and eye-hand coordination develop and the child is increasingly skillful in handling tools and materials. Physical skills are now used to enhance status. There are high energy levels, but extended energy use produces a need for rest in early afternoon.

Linguistic (5 to 7 years): Children between five and seven begin to grasp the symbolic nature of language, but their vocabulary comprehension is limited to concrete objects and activities. The receptive capacity (listening) is greater than the expressive capacity (speaking). Aggressive use of language is common, and the child can verbalize similarities and analogies (Leeper, Witherspoon, Day, 1984). Children in this age group use complete sentence structure of five to six words. Most can carry out "three unrelated requests" and can "respond correctly to complicated sentences but at times are confused by involved sentences" (Lorton and Walley, 1979, p. 63).

Gifted Children: Stages of Development

Psychosocial: or Industry vs. Inferiority (6 to 11 Years). Intellectual curiosity and performance are the dominant factors in behavior. Recognition comes from production, and feelings of inferiority come from not doing things well enough to take pride in accomplishments. Joy in learning is subverted by feelings of incompetence. "If the child is encouraged to make and do things well, helped to persevere, allowed to finish tasks, and praised for trying, industry results" (Biehler and Snowman, 1990, p. 45).

Moral: Conventional (9 through 20 Years). Rules are followed to impress others or out of respect for authority. Social order must be maintained.

Cognitive: Concrete operational stage (7 to 11 Years). The child is increasingly capable of demonstrating logical thinking, but thinking is still bound to concrete objects and events, rather than ideas. Reversibility and decentration develop, as does sociocentric thinking. The child is increasingly aware of the views of others and is able to think of physically absent things that are based on vivid images of experiences.

Formal operational stage: (11 to 15 Years). This is the stage of the ability to form hypotheses and propositions and to think about ideas and abstractions. The formal operational thinker is able to understand relationships among concepts and is metacognitive (able to recall previous learning and able to use learning strategies).

Physical: Gifted children as a group tend to be healthier, more energetic, stronger, taller, and heavier than average for their age (Terman, 1925).

Linguistic: The gifted child possesses high-level verbal skills; including the abilities to express thoughts clearly using advanced vocabulary, and ask thoughtful questions. That is, extensive vocabulary and linguistic skills are linked with a variety of other skills in a meaningful manner.

(Information in section Theories of Learning condensed from Biehler and Snowman, 1990; Woolfolk, 1990).

CONCLUSION

Gifted children are developmentally advanced and "can be identified by the fact that they exhibit skills like those of ordinary children who are older" (Hallahan and Kauffman, 1991, p. 433). Although gifted young children may be superior intellectually and have above average skills in areas such as leadership, their abilities and skills in all areas may not be equal. Because gifted children may exhibit uneven development, adults can have unrealistic expectations about the performance and achievement the children attain. Perfectionism or underachievement can be the penalty the child pays for unwittingly reinforced and unreasonable expectations. Sensitivity and wise guidance are required to help gifted young children function at potential. To provide necessary direction and assistance, knowledge of the characteristics and traits of both young children and gifted children is necessary.

At school, programming "based on developmentally appropriate experiences provides a good beginning for young gifted children and should be the first step in a comprehensive plan for the gifted" (Smutny and Blocksom, 1990, p. 39). Suitable program design is based on the understanding that young children learn through play. Linguistic, social, and cognitive skills are encouraged and mastered through play and interaction. Play in the classroom is a directed activity. The teacher should carefully plan the activities, arrange the classroom, select materials, and provide experiences relevant to age and interests and suitable for developmental levels.

There is a wealth of information available about young children. Much of this has come from theory,

research, and master teachers. Although much additional research is needed, what is already known must be intelligently applied to encourage positive action, rather than unplanned reaction to learning situations. Young children today, whether they are average, gifted, or disadvantaged, live in a precarious world. Their needs, as a group and as individuals, must be met. All children share common characteristics and behaviors, but theories are pertinent only as they apply to the "group" and to the extent to which they take into account individual differences in kind and degree.

Too often, vitally needed kindergarten programs are given minor attention when schools are being built and staffed. Special education children, especially the gifted, are often neglected and made to feel as outcasts. Gifted children are treated in stereotypical manner at best, and with animosity and hostility at worst. Sadly, they are treated that way by uninformed adults, other children, and worst of all, by teachers. Education for the gifted is frequently regarded as education for the elite. Educators and parents of gifted children often must expend energy and resources defending programs for gifted children since these programs are frequently regarded as "frills" and are cut during times of economic distress. Sustained support for the programs is indispensable to their success. Advocates for gifted education base their stand on two rational statements: 1) Every child in America is entitled to education that meets individual needs (a fundamental to education in a democratic society). 2) Society will be ill served if the abilities of its best and brightest are left to wither. Gifted children have the potential to be society's most capable and creative problem solvers and citizens. They are a precious natural resource--one that we cannot afford to waste. The nation's young intellectual talent must not be squandered; it will be sorely needed to help solve problems already looming on the horizon.

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RELEVANT EDUCATIONAL COMPONENTS

YOUNG CHILDREN	*GIFTED CHILDREN*
Specific Characteristics:	
Curious	Curious
Urge to explore	Urge to know
Forming concepts	Advanced conceptual knowledge
	Extraordinary quantity of information
	Unusual retentiveness
	Advanced comprehension
	High level of language development/verbal ability
	Accelerated pace of thought processes
Learning how to learn	Unusual capacity for processing information
Impulsive thinking	Reflective thinking/ability to delay closure
One-track responding/distractable	Concentrated attention
	Heightened capacity for seeing unusual and diverse relationships
	Integration of ideas and disciplines
Resistant to change/conventionality	Flexible/fluent/original/imaginative
	Unusual intensity/persistent/goal-directedbehavior
	Comprehensive synthesis
	Evaluative approach toward self and others
Beginning sociocentric	Unusual sensitivity to expectations and feelings of others
	Zany and weird sense of humor
Sense of humor	Idealism and sense of justice
Preconventional morality	Advance levels of moral judgment
	Unusual emotional depth and intensity
Experience rooted in present	Ability to predict/interest in future
	Early involvement and concern for intuitive knowing and metaphysical ideas and phenomena
Rudiments of problem solving	Advanced cognitive and affective skills capacity for conceptualizing and solving societal problems
	Involvement with the aesthetic needs (beauty, truth)
	Leadership qualities
Introduction to formal reading	Early reading ability (adapted from Clark, 1988)
Relatively short attention span	Relatively long attention span
Enjoys familiar music	Makes up original tunes/responds sensitively to music
General Curriculum Components:	
Developmentally appropriate practice	Differentiated curriculum
Play as learning	Accelerated (subject and/or grade advancement)
Whole language (4 language modes)	Enrichment (in-depth learning)
Balance: indoor/outdoor, quiet/active, alone/ together, inform/create, structured/ unstructured, observe/participate	Capitalize, balance, integrate, extend and enhance
Experiential based	Interdisciplinary
Emerging literacy	Confluent education (merging of cognitive and affective domains)
Learning styles (VAKT)	Individualized learning
Child centered	Learner centered (total individual)
	Invitational learning
	Integration of content, process and product
Specific Instructional Guidelines:	
Morning meeting	Type I activities (general exploratory) and Type II activities (group training) (Renzulli, 1977)
Learning centers (a 4-tier model: totally teacher planned to totally student planned)	Discover learning where appropriate (exploration, inquiry and invention, expansion)
Manipulate concrete material, form concepts	Use of appropriate concrete and semi-concrete materials and abstract tasks for concrete formation
Liberal arts basis--music, visual arts, p.e.	Expository teaching as necessary
Limited workbook use, if any	Contract packets
Role playing and creative dramatics	Play production with students as authors, producers, directors, scene designers, and actors
Multi-sensory approach	Cooperative and buddy learning
	SCAMPER technique (creativity)
	Creative problem solving
	Research skills and projects
Community resources (field trips)	Community and individual (mentor) resources
	Extensive library use
	Training in and use of technology
Teacher Role and Characteristics:	
Be knowledgeable of developmental traits	Be cognizant of characteristics
Arrange appropriate experiences	Arrange experiences and resources
Be sensitive, trusting, sincere	Have good interpersonal skills
Have a desire to work with young children	Good mental health and desire to work with gifted children
Enthusiasm	Keen sense of humor
High energy level	Sensitivity to individual differences
Good self concept	Eagerness to learn and wide interests
Committed to family involvement	Committed to family and community involvement
Well versed in classroom management	Well versed in techniques of guiding and facilitating independent learning
	Committed to excellence
Respects children	Respects individuality, creativity, imagination
	Flexibility
	Idealistic but practical
	Accepting of self and others
	Advocate for programs and children

PEGGY'S LIST OF APPROPRIATE MATERIALS

Explanation of price categories: Expensive-*E* = above $50.00; Moderate-*M* = $10.00-$49.99; Inexpensive-*I* = Free-$9.99

GROSS MOTOR SKILLS (large body movements)

large solid wood blocks (assorted sizes and shapes), trucks, planes (E-M)
balance beam (E)
climbing stairs or steps (I-E)
records (M)
playground equipment: balls, bats, beanbags (I), swings, money bars, slides, and large plastic climb-through tunnels (E)
sandbox (E)
jump rope (I)
"Nerf" toys (I)
beanbag target (M)
stepping stones (M)
ring toss (I)
scoop 'n' toss (I)
hop scotch chalk (I)
hula hoops (I)
rolling toys (wagon, buggy, push toys) (I-M)
riding wheel toys (E)
digging tools (i.e. small garden tools) (M)
water/sand table (E)
parachute (E)
plastic woodworking bench and tools (M)
empty boxes of various sizes (I)

VISUAL MOTOR SKILLS (coordinated eye/hand motions)
FINE MOTOR SKILLS (discrete, independent or coordinated hand movements)

beads, strings, patterns (M)
lacing cards (I)
clay/PlayDoh (store bought or homemade) (I)
weaving (cloth or paper) (I)
watercolor markers (I)
sorting games (I)
Tinker Toys (M)
"groovy" letters (I)
crayons and all kinds of paper (I)
feel and match games (I)
pegboards and plastic pegs (I-M)
keys and locks board (I-M)
"feely" boxes (I-M)
American Bricks (I-M)
puzzles (I)
Slink-a-ma-Jink (I)
colored blocks and patterns (M)
Rig-a-ma-Jig (I)
coloring books (I)
colored chalk and small chalkboard (I)
sewing cards (I)
Pic up Sticks (I)
tracing paper and tracing shapes (cardboard, plastic, wooden) (I-M)
Snap-loc (I-M)
parquetry and patterns (I-M)
Pop-oids (M)
Lego and Duplo (I-E)
"stuff" for water/sand table (spoons, funnels, rice, sand, flour, colander, sifter, egg beater (I-M)
Erector sets (M-E)
Lincoln Logs (M)
scissors, paper, newspaper (I)
alphabet tracing shapes (I)
typewriter (I-E)
magic slates (I)
wallpaper sample books, scraps of contact paper, scraps of carpet (I)
rice, macaroni, beans (I)
many sizes of brushes and many kinds of paint (finger, tempura, acrylic, watercolors) (I-M)

VISUAL PERCEPTION (visual awareness of differences and similarities of external objects)
puzzles (I-M)
geoboards and geoboard pattern cards (M)
beads, strings, patterns (M)
graph paper (I)
small colored blocks and patterns (I-M)
Etch-a-Sketch (M)
Lotto games (M)
Spirograph (M)
pictures (I)
shallow-sided plastic tub with either salt, flour, sugar or sand (I)
flash cards (I)
filmstrips (M-E)
Shape-O (I)
Tinker Toys (M)
sorting games (I)
pegboards and pegs and pattern cards (I-M)
coloring books (I)
small chalkboards and colored chalk (I)
sewing cards (I)
tracing paper and tracing shapes (I-M)
parquetry and patterns (I-M)
Lego (I-E)
Erector set (M-E)
Lincoln Logs (M)
scissors and tracing shapes (I)
Peel and Pub/Colorforms (I-M)
sponges, fabric paint, cloth (I-M)

VISUAL MEMORY (combined abilities of visual perception and short- and long-term memory)

puzzles (wooden, cardboard) (I-M)
beads, strings, and patterns (I-M)
colored blocks and patterns (I-M)
Lotto games (I)
overhead projector or light table (E)
memory games (I-M)
activities from *Workjobs* (I-M)
mapping activities (I)
tangrams and pattern cards (I)
colored chips (I)
sandpaper letters and numbers (I)
Connect Four game (M)
UNO card game (I)
counters (sticks, straws, buttons, bottle caps, beans) (I)
dominoes (I)
attribute blocks and attribute block activity cards (I-M)
wallpaper samples books or scraps (I)

AUDITORY PERCEPTION AND AUDITORY MEMORY (ability to hear and distinguish sounds; ability to remember sounds, stories, and oral directions)

records (I-M)
story time (oral stories) (I)
phonics games (I-M)
songs, *Piggyback* songs, action songs (I)
poems and nursery rhymes (I)
Simon Says game (I)
patterned stories and action stories (I)
finger plays (I)
Questioning games (ex: "Who took the cookies...?) (I)
Choral speaking (I)
"Bingo" type games (I)
treasure hunt (I)
rhythm band instruments (store bought or homemade) (I-E)

LANGUAGE DEVELOPMENT (ability to use language in various situations)
pictures of all varieties (I)
Scrabble (Junior) (M)
child's drawings (I)
language experience stories (I)
word tracing cards (I)
field trips (I-E)
sequencing cards (I-M)
creative dramatics (with or without costumes and props) (I-E)
flannel boards and shapes (I-M)
storytelling (I)
show 'n' tell (I)
finish the sentence or story books (I-M)
personal dictionary (I)
book sharing time (I)
picture cue stories (I)
wordless picture books (I-M)
postcards and Christmas cards (I)
pre-recorded books on cassette tape (M)
puppets and puppet stage (I-E)
big books (M)
word lists, charts, and cards (I-M)
large alphabet blocks (I-M)
booklets of blank paper (unlined and lined) (I)
Viewmaster and cards (I-M)
tape recorder and blank tapes (I-E)
telephone (wooden, plastic, or discarded "real" phone) (I-M)
dress up clothes (I)
child-size cleaning implements (broom, mop, bucket, feather duster) (I-M)

CONCEPTUAL DEVELOPMENT

sequence cards (I)
"I Spy" game (I)
show 'n' tell (I)
story mapping (I)
sorting games (I)
story sociograms (I)
"feely" boxes (I)
treasure hunt (I)
cardboard boxes (I)
Viewmaster and cards (I-M)
abacus (I-M)
five senses experience charts (I)
Cuisenaire rods and activity cards (I-M)
Playhouse and supermarket (I-E)
magazines and old calendars (I)
pets (I-E)
cooking activities (both pretend and real) (I-M)
child-size kitchen center with utensils, pots, pans and dishes (store bought or homemade) (I-E)
wallpaper samples books (I)
graph paper (I)
patterning boards (I-M)
semantic mapping technique (I)
magnets (bar, U-shaped, circle) (I)
prism (I)
aquarium (M-E)
terrarium (I-E)
bird feeders (I-E)
seeds, soil, pots, watering can (I-M)
rocks and shells (I-M)
magnetic board and magnet backed pictures and objects (I-M)
scales and objects to weigh (I-M)
calendar (I)
ruler, yardstick, tape measures, graph paper (I)
thermometers (I)
clock (I-M)
play money (I)
cash register (I-M)
old and/or broken electrical appliances (caution: CUT OFF THE CORD!) (I)
dish pan, clay, milk bottle caps (I)
food coloring (I)
old maps (I)
globe (I-E)

CHARACTERISTICS OF A GOOD LEARNING ENVIRONMENT FOR YOUNG CHILDREN

Major Domains of the Learning Environment: Physical Domain
Social/Emotional Domain
Intellectual Domain
Communication Domain

Program Characteristics

1. Individual differences (styles and rates of learning) should be accommodated.
2. There should be learning through the senses (feeling, hearing, tasting, smelling, seeing).
3. numerous and varied learning centers should be present, available and used throughout the day; free choice of centers should be encouraged.
4. There should be evidence of lots of verbal interactions: child to child and child to adult(s)
5. There should be "cooperative learning": children learning from and with each other.
6. There should be opportunities for children to engage in hands-on activities with self-selected materials and products.
7. Children should be allowed to plan and evaluate activities and products.
8. Children should be engaged in the scientific approach: exploring, discovering, inquiring, experimenting, and developing, testing, and validating theories about the physical world.
9. There should be an integration of curricula (reading and language arts, math, science, social studies, art, music, physical education) and a lack of adherence to rigid and artificial time schedules.
10. There should be a variety of flexible grouping arrangements.
11. There should be evidence of "print" everywhere—labels on children's possessions and room materials, charts, posters, magazines, and lots and lots of books.

Materials and Equipment

1. There should be a wide assortment of materials, supplies, and equipment for children to work with; the selection should reflect the need to accommodate many ages, abilities, and interests.
2. The children should be encouraged to provide suggestions for materials and allowed to supply some of their own materials.
3. The materials utilized should ensure development of both fine and gross motor skills.
4. The materials should encourage interaction (be user-friendly); activities should be open-ended and self-corrective.
5. The materials should be organized so that access and clean up is uncomplicated and effortless: they should have an obvious place that is easily reachable by the children and within their sight.
6. The children should be shown how to use the materials properly and then should be free to use the materials by themselves.
7. The materials should be safe and durable and both indoor and outdoor equipment should be in evidence.
8. The types of materials should include commercial, teacher-made, child-made, and both form and informal types.
9. The materials should include those that are concrete and sensory; materials that can be put together, taken apart, counted, arranged; those that can encourage verbal interactions; those that address various learning styles of the children.

Physical Environment

1. The rooms should be divided into numerous learning centers and areas, rather than straight rows and chairs.
2. The variety of learning centers should include language arts, math, science, art, music, housekeeping, woodworking, sand and water play, listening and viewing, reading corner, and at least one "quiet area."
3. There should be access to several large work surfaces which are the proper height.
4. The rooms should exude warmth, cheerfulness, and friendliness, and should be inviting, bright, and homey.
5. There should be adequate space for active exploring, creating, and moving about freely.
6. There should be lots of storage areas and an ample and labeled place for each child to put coats and rain gear, book sack, completed projects, and other possessions.
7. The rooms should be well heated, lighted, ventilated, and clean.
8. The toilet and sink facilities should be adequate, convenient, and of the proper height.
9. There should be provision for an easy flow of activities (traffic patterns) between indoor centers and indoor and outdoor areas; the out-of-doors should be used throughout the day as an integral part of the learning environment.
10. The outdoor area should be arranged in an appropriate manner to encourage free play, organized games, and quiet play with consideration for the safety of the children in evidence.

Outdoor Learning Environment

1. The outdoor learning environment should be considered as an extension of the classroom learning activities.
2. The children should be free to move outside to participate in integrated and enriching, rather than restricting, experiences.
3. There should be consideration for traffic patterns, including an entrance into rooms from outside to facilitate moving games, materials, and equipment in and out of the rooms.
4. The outdoor area should facilitate supervision and minimize accidents.
5. The outdoor area should be safe, free of glass and sharp metal, and materials should be check periodically to ensure safety and to make sure equipment is in proper working order.
6. There should be an outdoor storage area for organizing and housing and large outdoor materials and tools and the children should be instructed in retrieving and returning materials in the storage area.
7. The equipment, space, and activities should promote development of motor skills and muscular coordination.
8. There should be a mixture of inexpensive and/or homemade equipment and commercial materials; all materials should be made or purchased with age appropriateness and safety considerations in mind.
9. Some of the materials, such as boxes, wood strips, rubber tubes, should stimulate creative, open-ended activities.
10. The materials provided should inspire the children to do something based on original ideas, rather than just watching passively.
11. The children should have opportunities to work and play alone and in small groups and both actively and quietly.
12. There should be a covered patio or concrete area for such activities as block play, bouncing balls, playing with wheel toys, and for rainy day play.
13. There should be both sunny open areas and shaded areas.
14. There should be a grassy area for sitting, talking, reading, or cloud watching.
15. There should be a garden area for the children to grow vegetables, flowers, and other plants utilizing organic methods; there should be an adjacent nature environment with trees, plants, flowers, and pet cages that the children can explore (in both direct and non-direct manner) and analyze to discover science concepts about plants and animals.
16. There should be various types of climbing equipment and swings to help develop and strengthen arm and leg large muscles.
17. There should be balance beams, logs, and posts for the development of bodily balance.
18. There should be sliding equipment to help develop a sense of body direction.
19. There should be a slide or pole for climbing up and sliding down.

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20. There should be equipment and space for dramatic play (tree hoise, playhouse, outdoor theater).
21. There should be a sandbox and supply of buckets, shovels, containers.
22. There should be a water table with ready supply of fresh water and buckets, plastic toys, boats, sponges, corks, funnels, and measuring containers of various sizes.
23. There should be a woodworking area with tools and variety of sizes and shapes of wood pieces, paint, brushes and glue.
24. There should be provision for moving indoor materials such as painting easels and wooden blocks to the outdoor area; rolling carts and bins which can perform many indoor and outdoor functions should be available.

Teacher-Child Relationships & Child-Child Relationships

1. The teacher should act as a guide, facilitator of learning, and resource person rather than dispenser of orders and information.
2. The teacher should exhibit respect for and trust of children; the children should likewise show respect for and trust of the teacher and each other.
3. The teacher should circulate among the children, encouraging individual and group efforts, asking prompting questions, offering suggestions in a positive and sincere manner, and giving each child individual attention.
4. The teacher should appear "with-it," indicating awareness of each child's needs, progress, and emotional state, as well as the general climate in the room.
5. The teacher should clearly communicate rules of the room, responsibilities of group and of each child, as well as respect for the individuality of each child.
6. The teacher should plan activities that indicate that joy in learning, respect for others, and learning how to learn are the focus rather than acquisition of specific skills and subject information.
7. The teacher should ensure that each child succeeds in something every day.
8. The children should indicate by their actions that a sense of security and building of positive self-esteem are the goals of the learning environment; they should be eager to learn, not anxious that they don't know something.
9. The teacher should really listen to questions raised by children and indicate eagerness to find out answers "with" the children, not "for" the children.
10. The teacher should show confidence in each child's abilities and awareness of each child's social, emotional, and intellectual strengths and needs.
11. The teacher should model desire behavior and be aware of the impact of verbal and body language on teacher-child and child-child interactions.
12. The teacher should exhibit the characteristics of a "democratic leadership style": friendly, firm, encouraging, stimulating, helping, guiding, winning, warm, caring, and fair.
13. The teacher should actively involve children in planning and learning, capitalize on children's interests and curiosity, challenge children, and reinforce and recognize appropriate behaviors and achievements.
14. The teacher should be firm and consistent in handling problems; the teacher should never threaten or humiliate a child or group of children.
15. The teacher should be a good manager: there should be procedures for beginning and ending the day as well as techniques for making transitions from one activity to another.
16. The teacher should be skilled at interacting and communicating with parents.
17. The teacher should be cognizant of the developmental stages of child growth, as well as contemporary approaches to education, such as developmentally appropriate practice and whole language/emergent literacy.

(List adapted from Day, B., (1975), p. 188-192; See references.)

REFERENCES USED FOR LIST OF CHARACTERISTICS

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INTUITION IS FOR THE LEARNING

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As a kid, I was taught that women had it more than men. Intuition, I learned, was a God-given ability that came out of the blue, and you either had it or you didn't. It was something secret and mysterious, like telepathy or clairvoyance. As a kid, I knew I did not have it.

About forty years later, I read an article entitled "Training Intuition" by Ruth Cohen, a New York therapist. My first thought was, "You mean it can be learned?" All of my preconceived notions about the mysteriousness of the whole matter were shot down. I read on! What intrigued me the most was what the article said about human thought--human intuition.

Cohen pointed out that intuition is neither complicated nor mysterious, and that there are four common, understandable ideas that a person can work with to increase his intuition. I discovered that these four things can be used by parents to help their children become the best persons they can become; and by teachers, with all children and curriculums, regardless of content and age. The ideas are:

a. Perception needs to be clear.
b. Memory of pertinent facts is vital.
c. Control of emotions is essential.
d. Logical thinking is a must.

Unfettered Perception

It is said that no one has all the information necessary to make any reasonably complex decision. The hunch that fills the gap between information and decision is what I call intuition. Perhaps if we perceived more and better, we would not have to guess quite as much. We would merely intuit better, and that would be more valuable than relying on hunches.

To think intuitively is to see deeply into the reality of the moment, register it as fact, and then go beyond the moment. Rose-colored glasses do not lend themselves to the full sensing of reality.

Perception is the base-building block toward the understanding of something that is not at present a full reality. Here are some hints on what parents might do to help their children strengthen their perception and thus help them maintain and improve their intuitive ability, rather than gradually lose it.

As parents take their children to day care every morning, they might point out things that neither parent nor child has seen before. It might be new construction, a different person on the corner, a renovation of a house, or a new stop light. It can be anything that is

different. On the other side of perception, it is good to comment on what is the same. The fact that the sun is always in about the same place deserves a comment once in a while. The more the parents comment and notice similarities and differences, the more their children will get into the habit of perceiving things in a deeper way.

Of course, similarities and differences can be perceived in books, in people, in feelings, in clouds, and ad infinitum. Parents' imaginations are their only limits, and they should get excited about even the little things they point out. The enthusiasm will carry over, to perpetuate the habit of perceiving creatively.

Memory of Pertinent Facts

In very young children, memory needs to be nourished. The game of peek-a-boo is one of the first and best memory games. When children first realize that "out of sight" is not "out of mind," they realize that they can store a perception in their memory. From then on, parents and children should play peek-a-boo often. A goal is something that is in sight (memory) but not as yet in reality.

We can encourage older children to mentally compare yesterday with today. This is comparing something in memory with something presently seen. Ask the question, "What is the difference between what is seen in memory and what is seen in reality?" and wait for some great answers.

Good memory increases the ability to see things that are stored. Part of building intuition is having multifarious facts and images "in storage," so that they can be readily accessed when needed for the intuitive leap.

Children should be encouraged, by example, to continually learn things and place them in memory. Say things like, "You will never know when you will need that information" or "Don't rely on remembering where it is written down, just remember it."

When I talk this way in college classes, some students grimace because they have been taught by lazy adults that the brain and mind are limited in capacity--but that is not true! The more you learn, the more you can learn. Help children be positive about their learning power from the beginning, and for goodness sake set a memorable example!

Another good trick is for parent and child, little by little, to learn all the store names on both sides of a street they frequently travel together. At home, the child can then draw the block from memory. Most parents will be surprised at what their children remember, but the main benefit is that the memory is being utilized and strengthened.

Again, adults can draw from their own imaginations as to how to exercise memory. Poetry, names, events, batting averages--anything is fair game for this process. Part of training intuition is memorizing of pertinent facts. For example, if a therapist has to know about a certain disease in a certain person, he has to have many pertinent facts about the disease and the person. Thus, the memory, if it is to contribute to the power of the intuition, has to provide the appropriate ball park of information for the fact that is to be intuited. Of course, in young children any memory testing will strengthen the habit of memory. Parents, too, report that their own memories get better when they try these memory exercises with their children.

Unblocked Emotions

Emotion has to do with passion, enthusiasm, and zest. Its negative side has to do with hate, jealousy, and fear. To be more intuitive, we have to perceive the emotions that seem to be in our lives and be so clear and objective about them, that we can prevent them and their so-called "power" from getting in the way of our thinking.

The combination of unfettered perception, memory of pertinent facts, logical thinking, and controlled emotions is a receipt for a healthy, reasonable, solid decision maker. That is what intuition is all about. It is a high-level ability and requires high-level awareness and thought to practice it.

There is not enough intuition in our world, because there is not enough physical, mental, social, emotional, political, and environmental health in our world. We have a lot of work to do. We can start with ourselves, even as adults. Starting now with young children is to educate them well with regard to perception, memory, thought, and emotions.

Logical Thinking

Thinking takes time, and the human operative word for time is patience. The opposite operative is impulse, which is thought without contemplation. With the impulsive, short-term nature of our world, the concept of contemplation is a maturing one. Long-term projects are good for nurturing this type of thought. The care of a plant or a crop, like tomatoes, also pays off in good taste and nutrition. The care of a pet, even a goldfish, that has to be cared for over time is a good teacher. The care of shoes or other articles of clothing is an interesting project and has its long-term thought benefits.

Too often, a parent will respond, "I'll think about it" to his child's request. The decision is then given later, authoritatively and without the reasoning behind the decision. Of course, with the younger child, the parent doesn't have to go into all the whys and wherefores of a decision, but he should give some explanation, if only to demonstrate to the child that there is some, perhaps long-term, thought behind the decision.

When the child or anyone makes a good decision, the decision and the reasoning behind it should be praised. The principle of "catch them being good" applies as well to good thought as it does to good behavior.

Sound thought takes time and is characterized by a relaxed, unpressured mind. A home that is hurried encourages hurried, unreasonable thought. Logic is needed for unhurried thought and reason. It takes good modeling and much practice to become a reasonable person.

COOPERATIVE LEARNING: A WOLF IN SHEEP'S CLOTHING

Susan A. Linnemeyer, LCE — National Institute of Child Health and Human Development, Bethesda, Maryland

Cooperative learning has become one of the most popular movements in education during the past decade. Already, many school districts have enthusiastically jumped on the cooperative learning bandwagon. But before more school districts join in the movement, a closer look at cooperative learning is warranted.

In re-examining the cooperative learning research, there are some basic flaws that have led to misrepresentation of the benefits of cooperative learning, especially for the gifted and talented.

The following are what I consider to be the ten major failings or misrepresentations of the cooperative learning research in regard to the gifted and talented.

1. The majority of the cooperative learning research does not address gifted and talented populations. Slavin, Johnson, and Johnson, leaders of the cooperative learning movement, typically examine outcomes of students in terms of high, average, and low achievers (Slavin, 1983, 1988; Johnson, Maruyama, Johnson, Nelson, & Skon, 1981). The top one-third of the class would not be classified as "gifted" by any school's standards. Dividing a class into three groups reduces total variability in each group by only 17 percent (Goodland, 1960). For such cooperative learning research in which supposedly gifted and talented populations or high ability groups are included, there is little or no data provided for defining those groups (Lucker, Rosenfield, Sikes, & Aronson, 1976; Smith, Johnson, & Johnson, 1982; Webb, 1982a, 1982b).

2. The supposed gains made by gifted and talented students in cooperative groups are not well-defined and/or refer to gains in basic skills. In most studies, the gains are defined in terms of achievement test scores (Slavin, 1984; Slavin, Madden, & Leavey, 1984). There is no indication if the tests were administered off-grade level or if norms for the gifted were employed. If these precautions were not taken, the results could be invalid due to confounding effects of regression toward the mean (Campbell & Stanley, 1963). In addition, in the majority of the studies, the gains measured in the content areas refer to lower level skills, e.g., math computation (Slavin & Karweit, 1985) and language mechanics (Slavin, 1978) as opposed to higher level skills, e.g., mathematics applications or literary criticism.

3. A false comparison group is frequently used in cooperative learning research to assess the gains of gifted and talented students. The majority of the cooperative learning research employs the traditional classroom as the control or comparison group (Sharan, 1980). For the gifted and talented, this procedure portrays an inaccurate picture. It is not surprising that greater gains are found in the cooperative learning group versus the traditional classroom that lacks special provisions designated for the gifted and talented. Administrative arrangements that are designed to meet the needs of the gifted and talented (e.g., ability grouping, full-time classroom for the gifted and talented, mentor program, acceleration, and independent study) should be employed as the comparison or control group.

4. The major reasons given for implementing cooperative learning are related to low ability and average students and not gifted students. Cooperative learning advocates, e.g., Hollifield (1978) and Slavin (1986) state that cooperative learning should be implemented so that low ability and average students:

   a. may improve their abilities and skills,
   b. be exposed to better teachers, and
   c. be provided with critical and creative thinking instruction.

It cannot be denied that these outcomes are desirable outcomes for low ability and average students, but should these outcomes be made at the expense of gifted students? Why do these improvements depend upon the inclusion of the gifted and talented in the learning environment? For example, all students have the right to excellent teachers. If the skills of some teachers need to be upgraded through staff development, cannot skills be improved independent of the types of students who are receiving the instruction?

5. Cooperative learning is not more democratic as purported by its advocates. Providing equal educational services to unequal individuals is not democratic. We do not expect the mentally handicapped student to be educated with the same curriculum as the average student. Why then, do we expect the mentally advanced student to receive the same curriculum as the average student?

6. Gifted and talented students are not given an opportunity in cooperative learning groups to have their ideas critiqued and evaluated at a high academic or creative level. Realistic appraisal of ideas and products is essential to the gifted and talented student's growth and development. Frequently, gifted and talented students do not receive critical feedback of their work until college. Those students will be at a disadvantage to students who have been challenged throughout elementary and secondary school .

7. Advocates of cooperative learning falsely claim that gifted and talented students are at risk socially and that cooperative learning can ameliorate their impaired state. Research has repeatedly demonstrated that gifted and talented students are as socially well adjusted as students of average intellectual abilities (Janos & Robinson, 1985; Karamessinis, 1980; Solano, 1976a, 1976b; Terman & Oden, 1947). If social skills are supposedly improved through cooperative learning, then all participants will benefit from this interaction. Research has not proved, however, that cooperative learning is the best instructional method for improving the social skills of students.

8. Cooperative learning does not necessarily foster a healthy learning environment for the gifted and talented. When the gifted and talented student is assigned

to a heterogeneous setting where there is an imbalance of academic talent, the gifted and talented student is placed in an awkward situation. The gifted and talented student may either display academic talent and run the risk of being viewed as a "know it all" or the gifted and talented student may decide to assume a silent role and become a nonentity in the group. In either situation, the gifted and talented student is the loser. Research has shown that gifted students become intolerant of others with lesser abilities when forced to be in heterogeneous groups the majority of the school day.

9. Cooperative learning may result in underachievement in gifted and talented students. If gifted and talented students are not challenged in cooperative learning groups, then they may cease to be motivated. Students may begin to perform at levels beneath their abilities. Research has demonstrated that underachievement is a prevalent problem in the gifted and talented (Gallagher, 1957; Shaw & McCuen, 1960; Zilli, 1971). Among those children who are above average, 50 percent of the boys and 25 percent of the girls can be labeled as underachievers (Mordock, 1975). The gifted and talented must be provided with a curriculum that meets their educational needs.

10. If students are awarded the grade of their cooperative learning group's combined effort, students' permanent records can be damaged. The procedure of awarding one grade to all students in the cooperative learning group is employed in some cooperative learning methodologies. At the high school level, this evaluation technique can become a critical problem. Competition is keen for top-ranked universities and colleges. Gifted and talented students need to have outstanding cumulative grade point averages to gain admission and cannot afford to have their grades suffer because of an inaccurate assessment of their abilities.

Alternative to Cooperative Learning

We have seen that cooperative learning is clearly not the preferred administrative structure for serving the gifted and talented. The advantages of ability grouping for the gifted and talented, however, are numerous and cannot be denied. When gifted and talented students receive instruction at their ability level, increased achievement is the result (Atkinson & O'Conner, 1963; Daurio, 1979; Feldhusen, 1989; Kulik, & Kulik, 1982, 1984; Petersen, Brounstein, & Kimble, 1988; Van-Tassel, Willis, & Meyer, 1989; West & Silvers, 1960). In ability groups, higher level thinking (application, analysis, synthesis, and evaluation) can be stressed with the gifted and talented who need less time with the lower level thinking skills (knowledge and comprehension). One of the greatest benefits of ability grouping is the opportunity for gifted and talented students to interact with one another. Frequently, as much learning occurs among students as between teacher and students. In regard to self concept, ability grouping (whether part-time or full-time) allows gifted and talented students to feel accepted, often for the first time, by their peers. The improvement of self-concept is not restricted to the gifted and talented. When gifted and talented students are removed from the heterogeneous group, other students have the opportunity to receive recognition that normally would be given to the gifted and talented students. The self-concepts of students of average ability subsequently improve.

Conclusion

Much like a wolf in sheep's clothing, cooperative learning has penetrated the field of gifted and talented education. Claims have been made as to the effectiveness of cooperative learning which cannot be substantiated. Cooperative learning does not consistently offer gifted and talented students the challenge, the thrill of learning, or an education commensurate with their needs. Therefore, cooperative learning should be used only to a limited degree and with caution with gifted and talented students. Other administrative structures (self-contained classrooms, continuous progress, and mastery learning) should be pursued as alternatives for meeting the needs of the gifted and talented.

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REACHING ALL STUDENTS IN A HETEROGENEOUS CLASSROOM THROUGH WHOLE LANGUAGE

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The whole language method of teaching young children to read is like attending an enormous gourmet buffet with 25 friends. Regardless of individual tastes or diets, there is food for all. Whole language offers the same array of opportunities to a teacher coping with a class of children who have a broad range of abilities and needs. The typical classroom of the 1990's includes children with academic potential ranging from advanced or "gifted" to very slow, from children who come from homes where they have had rich and varied experiences to those who come from homes where the main concern is daily survival. Educators must provide for all of these children at a time when most school districts are dealing with tighter budgets, more scrutiny from taxpayers and governmental agencies, and increasing demands for accountability. Whole language can provide a foundation that will meet these challenges.

Some research suggests that "whole language," a literature based reading program, combined with individual and group writing activities, is a highly effective way of teaching young children to read (Kitano, 1989; Trachtenburg & Ferruggia, 1989; Gambrell & Sokolski, 1983; Gamby, 1983). During the past 30 years New Zealand has used this method to teach reading and the result is an impressive literacy rate. While not a new concept, whole language has undergone change as research has focused on strengths and weaknesses, while methods for implementing it have been generated by classroom teachers. The state of Ohio produced a program for students having difficulty with early reading skills. Based on New Zealand's whole language program, the Ohio Reading Recovery Program has documented impressive growth on the part of young children who were not successful learning to read by traditional basal methods. Follow-up studies suggest that after this excellent start these children did not face difficulties later in school (Tunnell & Jacobs, 1989). While there is much evidence to support the benefits of this approach

for the slow learner, this article will suggest that whole language is also a way to provide the challenges for a smaller but equally important part of the population in the regular classroom -- the gifted student.

Needs of the Gifted Student

Attention that has previously focused on the handicapped student and the slow learner is now beginning to shift toward the gifted student. "Today all but three states have positions allocated for state directors of gifted programs, and 24 states legislatively mandate service for the gifted" (Parker, 1988, p. 32). This places new pressure on local districts for often it is the local district that must pay for the programs. Cost is an ever-increasing concern to educators as more is demanded of the public school. However, taxpayers are reluctant to provide the necessary funds for new programs as well as the materials and equipment needed to implement them. "Contrary to popular opinion the gifted do not ordinarily excel without assistance...like children with specialized problems, they must have special attention to their individual levels of ability if they are to progress. Neither an increase in difficulty or a 'pacing' arrangement is enough to offer this challenge" (Parker, 1989, p. 32). Kitano (1989) states that this process does not mean the teacher must teach on a one-to-one basis but should offer a choice of activities that vary from simple to complex. Many classrooms have students who are able to learn faster and more than their peers, and it is important for them to be presented with material that will challenge their unique abilities.

While not the only answer, whole language is a vehicle that can be adapted to provide for children at both ends of the learning continuum. It provides a basis for a teacher to engage a class in learning activities that can be individualized to meet the needs of all. In addition, it has the advantage of being implemented with a minimum of cost while the time involved in developing the lessons can be handled by a busy teacher.

"Big books," or enlarged versions of popular texts are the foundation for the whole language program in many schools. There are many big books available, and when combined with smaller student texts, can form the basis for the reading program. While these are initially expensive, the outlay would not equal that of a basal series, and the rewards would be considerably greater.

If the teacher does not have access to big books with multiple copies of student texts, library books can be used. Once a library book has been read to the entire class, the children select fifteen to twenty words from the story that become the focus of that week's work. After discussing the story line, the class can break into smaller groups for individualized instruction. Each group then rewrites the story in their own words, including the designated vocabulary, and that story becomes the reading lesson for the week. This allows the children to use the book as the basis of the lesson but the teacher can control the length, content, and difficulty according to the needs of the group. A single copy of a book from the school or public library will provide work for a whole class.

The Place of Skills

Skills are the foundation of any reading program. It is necessary to teach children to decode words, but through whole language it is accomplished in context rather than in isolation. Skills will be evident in any book; for example, if the class is learning about blends, words from the book they are reading can be used for those lessons. Most stories have words that can teach any of the objectives included in an early primary curriculum and the daily lesson can use these words to focus on the skill objectives. For advanced children one lesson on the skills will probably lead to mastery, while the remainder of the time can be spent on more challenging activities. Extension activities challenge creative and divergent thinking, extend vocabulary, and incorporate the use of problem solving (Bryant 1987, 1989, 1991). The children who need a different focus can receive more re-enforcement in their small groups. If several children are having difficulty with a particular skill, the class can be re-grouped for re-teaching activities.

Classroom Management

Flexible classroom management offered by a whole language approach is a strong point in its favor. It is difficult to combine members from different reading groups when instruction depends upon basal texts because the controlled vocabularies create vast inequities. Whole language offers the same basis to all students and allows the slowest readers to work in a group with the most proficient students when the focus of the lesson is general and appropriate, such as comprehension or sentence structure. The more advanced learner can help others and the attitude of all students will be less judgmental, more positive and caring. Children who have been allowed to help their classmates benefit from this experience, increasing their sensitivity to the needs of other children. One of the significant advantages of the whole language approach is the positive effect it has on the self-esteem of all children in the class (Trachtenburg & Ferruggia, 1989). When children use the same material, the stigma of being a weak reader is removed and academically advanced children do not feel isolated when their work is not like their classmates. A creative teacher can reach all these levels by developing questions and activities that will provide the varied academic challenges needed by this diverse population. The pace can be adjusted to provide for children who need more time to master skills while those who learned the first time do not have to sit through lessons that offer no challenge. The use of the same book encourages discussion among all the students, allowing them to learn from each other.

The Disadvantaged Student

Whitmore (1982) notes that it is easy "to recognize intellectual giftedness in the remarkable high achiever...(but it) is not easily recognized in children who are not high achievers academically and who do not conform to adult expectations for gifted children" (p. 274). Often these characteristics may be overlooked because children come from disadvantaged backgrounds and have not had the varied experiences of their more advantaged classmates. They may lack the language skills to convey thoughts and experiences, or to frame questions for observations that they make. It is necessary, therefore, to structure a program that will build on common or shared experiences so strengths as well as needs of all students will emerge and can be addressed.

Whole language offers disadvantaged students

the opportunity to compete on a more equal basis with their peers. The use of literature helps broaden their experience and information base while learning to read in the same way as the rest of the class. When students are offered a basis that helps them perform equally, academic strengths that had not been previously demonstrated may begin to emerge. If these children are offered only basal texts, they may have difficulty relating to the stories, thus making it more difficult to master basic skills. These early problems foreshadow greater difficulties in later years. It is important that the early educational experiences of disadvantaged children narrow rather than increase the gap caused by their backgrounds.

Unit Development

The following unit, based on *More Spaghetti, I Say!* by Rita Golden Gelman, demonstrates how work can be planned to meet the multiple academic needs found in most regular classrooms. The book is available in the "big book" form, and has student texts. This unit involves the use of these books as an example of the effectiveness of these tools. The groups will be indicated as advanced learners, typical readers and slow learners.

Whole Group Instruction

As the teacher, introduce a story and lead a discussion about the title, author, illustrator, publisher, and dedication. Then read the story to the class using a pointer to help the class follow the text. The first time the story is read, the class should just listen. If you read the story with great expression, drama, and obvious enjoyment, the children will be enthusiastic when it is their turn to read aloud, and will follow the example. Point out places in the story that call for special emphases as bold print, exclamation marks, or small print that suggests softer voices. The children will remember these visual clues and use them when reading. After several weeks of this modelling, the students will no longer need to be reminded to read with expression.

Following Gelman's model, lead the class in a discussion of the story line, sequence of events and outcome of the story and allow time for the children to discuss their favorite pasta dishes. Have the class select a designated vocabulary of 15 to 18 words from the story. Write these words on paper that has been cut out to look like empty spaghetti bowls for display on a bulletin board. Children will be drawn to the board to read the words they know and will listen to each other, thus learning new vocabulary. More adept readers can be paired with those who need help and can assist with informal drill instruction.

Each day ask children to point to a word they know. Even the slowest learner will know one or two words and will be able to perform with success as do others in the class. The actual book should be placed in a location that is accessible to the children for this encourages them to read it during free time either alone or with classmates.

Have the whole group each day reread the story for a different purpose. One session may focus on skills to be presented to the whole class, or another may have the children predicting outcomes if certain words, characters, or events were changed in the story. The children also could discuss the style of the illustrator, comparing it with other books they have read.

This is not usually a quiet activity, but one that will generate enthusiasm on the part of the students. Reading in unison allows emerging readers to participate without feeling uncomfortable about words they do not know, as they follow the pointer from left to right and top to bottom. Individual children can be asked to point out designated vocabulary words or words that illustrate a reading skill on which the class has been focusing. As the week progresses the text will become familiar to all thus allowing the students to do the reading with support offered only when a word is unknown.

Related Activities

During the week the children can use spaghetti or multishaped pasta in a number of ways:

- Art projects can be planned that use a variety of dyed and natural pasta; alphabet letters can be glued to paper for a spelling drill.
- Spaghetti can be cooked in the room and handled by the children and words listed to describe its texture and feel.
- Small pieces of spaghetti can be dropped in a container of water, and another with club soda or water mixed with vinegar and baking soda. The children can observe what happens and form questions about what the liquid is and why the pasta behaves as it does.
- The children can measure the length of a cooked piece of spaghetti with an uncooked piece, and compare and discuss the difference. As they conclude that the absorption of water has caused the change, they can speculate on whether this happens to any other food. Predictions can be made about the outcome of cooking vegetables, rice and other foods. Some of these foods could be cooked in the classroom, and as the results are observed they should be recorded.
- Brief summaries of class work could be sent home asking parents to involve their child in meal preparation to further extend these experiences.
- Making noodles is an excellent activity and the children will enjoy the experience of mixing and rolling the dough. The recipe should be written on chart paper to be read by the students as they work.
- They can compare and contrast the difference between raw, dried, and cooked pasta. This could be done as a whole group activity or a volunteer could work with small groups.
- "On Top of Spaghetti" is a song that the class will enjoy singing. If the words are displayed in an accessible location, the children read the words independently during the day, especially if a pointer is left nearby. Any activity that involves children with words further extends the Whole Language experience.

Opportunities for the Gifted

In each of these activities, gifted students have opportunities to extend and broaden their knowledge. They will see relationships and contrasts that are not obvious to more typical learners. One strength of this approach lies in the teacher's ability to encourage gifted children to respond in a way that is compatible with their abilities. While these children are responding at higher levels of understanding, the rest of the class is also learning by listening to their exchange of ideas. They should, however, have opportunities to work in groups with others who have similar abilities for it is important for them to be stimulated by other gifted children.

One of the more obvious advantages of this method is the learning opportunities for the gifted non-reader. If a program uses activities that depend on reading ability, then the strengths of this child take longer to emerge. In a warm, accepting environment where group discussion is a part of the daily schedule, children who are encouraged to observe, question and discuss become confident enough to make statements that are beyond simple factual observations. As the teacher builds an atmosphere of trust, shy children will become willing to articulate their observations, and those divergent thinkers whose initial comments had little to do with the questions will begin to channel their observational skills into more valid, if unusual, ways of thinking.

Small Group Instruction

At this point, the traditional form of "reading groups" is appropriate. In small groups, slow and typical learners can be offered the instructional strategies appropriate to their individual needs. The slow learners can spend the first few minutes of small group instructional time reading parts of the story and then proceed to concentrate on the skills that are necessary for them to master. If reading readiness activities are appropriate in the beginning of the year, they can be implemented at this time.

The typical learners can read the story at a pace that is comfortable for them so they can focus on areas of need. When a child encounters a word that is unknown, it should be recorded so reteaching can occur later. This can be accomplished by having the children work with another student in the class or by taking the words home so parents can provide help. As the children read, the teacher will note those who are having particular difficulties and address those needs on an individual basis at the conclusion of the group. By the end of the week, many of the children will have learned to read all or most of the book fluently.

Early in the year it is appropriate for all students, including the advanced learners, to read out loud as this provides the teacher with an informal method of assessing the strengths and needs of each child. It is also important for advanced readers to have opportunities to read orally throughout the year, as their modelling will be helpful to other children. After the necessary assessment has been made, the advanced readers can read an assignment silently before the group meets in order to allow instructional time to be spent on other objectives.

One activity that would be challenging and interesting for advanced learners is to work with recipes. The children can read about different ways to prepare pasta. The group could collect recipes from family members and friends and make a pasta cookbook. This would also provide an opportunity for a lesson in economics. How much would it cost to print a book? What would be a fair price? What would be the margin of profit? The children could compare the price of their book with other cook books. How does it compare in length? Does that help determine the cost of the book? A speaker from a print shop could visit the class and discuss what is involved in printing a book. Help the children develop questions about the process for using colored pictures in texts. Although the advanced group would make the preparations for this visit, the entire class would be involved and benefit.

Student Involvement in Planning

Advanced learners should decide what they would like to learn about spaghetti. They could find out how many different kinds of pasta there are, where it originated, what country consumes the most pasta, and why and how is some pasta colored. Discuss how and where the answers could be found. Then, as a group, decide how much is reasonable to accomplish during the week, allowing the children to assist in planning what they will study.

When children are involved in the development of their lessons, they have a sense of ownership, heightening the interest level. As the experienced teacher knows, this does not just happen, but comes about through careful preparation. Possible questions need to be formulated and areas of study outlined before the group discussion, so materials will be readily available.

Evaluation

The increasing concern for accountability makes it necessary for the classroom teacher to measure learning on a regular basis. The use of paper and pencil methods at this early age should be kept to a minimum. It is more appropriate to make daily informal evaluations based on individual participation in group discussions, responses to questions, performance during small group instruction, and task completion. Formal testing can be used for the reading skills. Each student should be evaluated on the basis of individual growth in verbal fluency, ability to reason, and creative expression. This allows equal opportunity for all children to demonstrate their academic growth rather than being limited to test results.

Conclusion

Whole language will help children be excited about reading, and the results will be children who are eager to read. The slow learners will feel that they can do as well as their classmates, and this feeling of success will help them learn to read at a faster pace. The abilities of the advanced learners will be stretched by the planned activities, and their instructional time will be spent on new concepts rather than on material already mastered. These advanced students will begin to look at each topic as an opportunity to learn as the teacher involves them in planning their work. Although the basis of their reading is the same as their classmates, they are expanding it to encompass material that will instruct and challenge. The children will learn from each other as they listen to discussions of the different groups. Opportunities will be provided to encourage leadership skills enabling students to be more tolerant of the differences of others.

Enthusiastic students pay attention, are easy to motivate, and are excited about learning while they are developing a love of reading. Whole language can readily satisfy appetites large and small, sophisticated or simple, offering something for everyone.

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GIFTED EDUCATION --TO BE OR NOT TO BE?

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Billy is the tallest boy. Ben dribbles the basketball best. Drew goes to speech class for stuttering. Cynthia sees the L.D. teacher to help her with her dyslexia. These children all have differences. Some of them are weaknesses and some are strengths. And then there's Bob. He raises his hand before anyone else. He completes his work first and it's usually 100%. He asks the most provocative questions. Is he different? Yes. Bob is different. In plain and simple terms, he's smarter than the rest of the children --a lot smarter. So what if he is smarter? Someone has to be the smartest in the room. Educators make a commitment that every child has the opportunity to reach his potential. Does Bob?

Do we have a special responsibility to gifted children? Must we do something different for them? We feel for the Hispanic child who doesn't understand a world of English, and we get her a bilingual teacher. Why don't we understand the desperation of the child who has to always slow down to keep pace with the others. He wants to run ahead because he is fleet of foot and thirsty, but there is nowhere for him to hurry to drink. Why do we not offer to help this child?

One common argument against gifted education is that the child that is smart will do just fine anyway. That is wishful thinking. Brain researchers have proved that individuals with high levels of intelligence or gifted individuals have biological differences. Neuron and dendrite activity is more prolific and more energized. The functioning of the gifted child's brain is different. It moves faster and with more activity. If the appropriate environment for stimulating the brain is provided, it will flourish. If it is not, talent can subside, be dormant, or perhaps lost. (Clark, 1988) How can a gifted child do just fine if nothing is provided for her. If she only has the availability to do what the other children (average) are doing, it is a denial for her special needs.

Lyon (1981) in his article "Our Nation's Most Neglected Natural Resource," bemoans the need for attention to this neglected group of children. He goes on to explain that government and society have so much to gain from these children. In 1957, the launching of Sputnik precipitated a wavering commitment to the gifted by the Federal government. The fear of the former Soviet Union's superior space technology spurred financial support to education for the academically able science students. Later, Lyon explains, civil rights came into political focus and interest shifted from the most capable to the least fortunate. We realize that educational funding is affected by interest groups and political elements. But we must ask what group might help the country as a whole.

If we are going to accept there are differences, why do some get more than others? And what is the return on the investment? If it costs $5,500 to educate a student in Chicago, how much extra is spent for bilingual, mentally handicapped, or the gifted? A newsletter from SENG reported that in 1979 the Federal government spent $2.42 for the education of each gifted child but spent $1,000 for each learning disabled child.

Why are we so willing to accept our football and basketball stars? We seek them out, we find a special place for them (varsity team) and we support and nurture them (pep rallies, cheerleaders, attendance, and applause). Would we do the same for our most academically able? We must find a special place for them too. One way to do that is tracking. Tracking is nothing more than children assigned to a group on a full-time basis for instruction based on their ability level.

Tracking has become a dirty word. Studies by Goodlad (1983) and Oakes (1985) show that low-level tracks elicit abominable results. But Oakes reluctantly admits that students in the upper tracks benefit from the advantages they receive in their classes. If the other tracks don't work, fix them. But don't deprive the students who are flourishing in their environment in the top track. Feldhusen (1989) also did studies and concluded, "...that grouping of gifted and talented students in special classes with a differentiated curriculum...leads to higher academic achievement and better academic attitudes. Gifted and talented youth need accelerated, challenging instruction in core subject areas that parallel their special talents or aptitudes. They need opportunities to work with other gifted youth."

Charles Nevi (1990) also supports tracking. He say, "Tracking is not an attempt to create differences, but to accommodate them. Not all differences are created by the schools, most differences are inherited."

A meta-analysis of 52 studies on tracking was done

by Kulik and Kulik (1982). Tracking does not have a negative effect on average and below average students as some researchers would have you believe, not to mention its positive effects on above average tracks. Studies by Van Tassel-Baaken (1989) and Tremaine (1979) support the fact that gifted students do indeed do better as a result of gifted programming.

Putting research aside, homogeneous grouping is done because it is the most efficient way to teach. When a teacher sees a continuum of talent in her classroom in math or reading, she forms as many groups as she has time for, to meet the diverse needs. This problem is magnified when we encounter the gifted child. The gifted child's abilities cannot be met in the normal classroom just as the mentally handicapped cannot be met. When you are looking at the top 3%, or the bottom 3% of the population, it is unreasonable to consider that their needs can be met in the realm of the regular classroom.

Here we are at the close of the twentieth century and we are overwhelmed by the ills of society, the devastation of the planet, economic failure, poverty, crime and...need I go on? It's depressing. But there's hope, and it's found in a resource we haven't properly tapped — our gifted children. I'm putting my money on them!!

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FROM OWNERSHIP TO *ALLSHIP*: BUILDING A CONCEPTUAL FRAMEWORK FOR EDUCATION OF THE GIFTED AND CREATIVE

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To unite the bits and pieces of fragmented practices that characterize the field of gifted education and to explain the complex relationships that underlie the distinctive nature of the gifted/creative child's developing intelligence, theory development is essential. It also provides an heuristic for research and makes it possible for us to explain optimal development for all children. Clearly, theory development is critical to progress in the field of gifted education—and all education.

THE FOCUS

Giftedness is simply optimal development within any theoretical view. Existing theories dealing with cognitive development or intelligence may be able to explain giftedness as "optimal universal development leading to mastery, actualized or potential." Universal means development that occurs in all children in all cultures, without specific training, such as representing ideas with words or symbols, classifying, or serializing. The greatest difficulty comes in explaining novelty (something new) and creativity, which is defined as "the production of something new or rare of value, wherein both the self and the field of endeavor are extended or even transformed at mature levels, and there is a discontinuity with what was before a change in context." (See Bateson, 1979; Cohen, 1985, 1989, in press-a; Feldman, 1980, 1982, 1988; Goswami, 1988).

Focus on Theories of Creativity

Most definitions of giftedness in adults involve creative productivity. We need to understand where giftedness must lead—the bridge between schoolhouse giftedness, or doing well in academic areas (Renzulli, 1986), and adult productive creativity (Siegler & Kotovsky, 1986). We must recognize that the creativity in childhood is connected to, yet differs from, the creativity exhibited by extraordinary adults whose contributions improve and transform the world. There is a continuum of creative behaviors that accounts for these similarities and differences (Cohen, 1989). We need to understand how to support development in children, so that they can become productive, creative adults. In fact, the development of creativity should be the purpose of education because, by supporting creative devel-

opment in children, we effect creative productivity in adults, which effects the betterment of society.

Focus on Intelligence as Adaptation

Giftedness, talent and creativity all relate to the notion of intelligence. Intelligence is the capacity to adapt (Piaget, 1980). Giftedness, as optimal universal development, allows the individual to adapt more readily because he can better anticipate possibilities. Talent, optimal non-universal development in a specific domain, constructed through appropriate instruction at the right time, such as teaching chess (Feldman, 1980, 1982), is a high form of adaptability that allows one to master a specific field at a level that enables him to extend that field by recognizing gaps, discrepancies, or conflicts in it. This brings us to the highest level, that of creativity. Creativity relates to intelligence and adaptation because creativity is an adaptive function in which the individual changes his immediate circumstances or the world (depending on the power of the creative act), to adapt to his or her frame of reference (Cohen, 1985, in press-a; Feldman, 1982, 1989; Gruber, 1981, 1989). This is adaptation in the reverse—the world adapts to the individual instead of the other way around.

Theories of intelligence must therefore be included in any discussion of optimal development of mind.

Precision of Definitions

Most of us do not share common meaning—even when we share common vocabulary. The term giftedness, for example, is bestowed upon individuals for many reasons, ranging from extraordinary past accomplishments or an IQ over 130, to doing well in an area valued by one's culture or society, or to the one I proposed earlier—that of actualized or potential optimal universal development leading to mastery. I have classified the various definitions of giftedness into eleven different categories, and even within categories there are subtle variations (Cohen, 1989). A compendium of these terms would be a valuable contribution to the field, particularly if these definitions could be unified, or an agreement made to appreciate the differences.

WORLD VIEWS: A CONCEPTUAL LENS

"The world is always perceived through the lenses of some conceptual network." (Overton, 1984, p. 10). When looking at theories of creativity and intelligence, it is essential that we recognize our own conceptual lenses and the world views they provide, because our observations are never free from personal interpretation.

For Overton (1984), only two such world views exist that are integrative: the mechanistic and the organismic. According to Lakatos (1978), both of these have certain, irrefutable aspects—the "hard core," characterized by a root metaphor, and the "positive heuristic," the source for research and derivation of theories.

The mechanistic world view has a machine as its central metaphor; and stability, fixedness and regularity as its hard core. The positive heuristic is reductive, finding the cause. It is focused on the present, and views change as continuous. Explaining change presents a problem.

The organismic conceptual lens has a living thing as its central metaphor and, as its hard core, a view of the world as dynamic, active, and changing. The positive heuristic employs holistic analysis by which the organization of the structure can be inferred. It is focused on the future (a longitudinal, or *becoming* view), and change is perceived as discontinuous. Explaining stability presents a problem. Theories that have common central cores and a common conceptual lens can be thought of as "families of theories" (Overton and Reese, 1973), because they share these central notions and are therefore related. Building theory "families" is an important first step; however, it may be very difficult to bring together the two major theory families.

And Never the Twain Shall Meet: The Problem of Incommensurability

According to Overton (1982), these conceptual frameworks are irreconcilable — conflicting ideas. Any attempt at compromise destroys the core integrity of one of the conceptual lenses. The hard core and positive heuristic of one world view must be given up (Overton, 1984). Creativity is the perfect avenue for determining which metatheory provides the most complete explanation.

Organismic theories deal with universal structures and help us understand the direction and organization of creative development. They offer a *becoming* view. Because these theories accept qualitative and discontinuous changes, creative leaps or insights do not have to be explained as the effects of antecedent or contingent causes; but creativity requires variation, non-universal systems, non-linear pathways and an incredible coincidence of confluent factors in order to reach extremely high levels (see Feldman, 1982). Because mechanistic theories focus on environmental factors, we need them in order to explain the conditions necessary for creative development and individual variation. Mechanistic theories focus on the here-and-now, a cross-sectional, or *being*, view.

Need for Integration

To resolve the issues of directionality, organization, individual variation, non-linear pathways and environmental factors, we need to integrate their conceptual frameworks. One way is to consider others' attempts to use this approach, such as Koestler (1964) who mixed the world view of mechanistic/associationist with that of organismic/psychoanalytic. Resolution might also be seen in theories that appear to straddle both camps, such as in the biological approaches employed by Clark (1988) and Gardner (1983). Some theories have hard-core central metaphors that differ from the research heuristic. For example, Freud's formulation of change through stages was organismic, but his research heuristic was reductive. We could also approach resolution by considering the differences between competence and performance, the mechanistic view affecting the performance beyond rate and terminal levels (see Overton and Newman, 1982).

Discontinuity, Purpose and Causality

The greatest possibility for resolution lies with three conceptions: discontinuity, purpose and causality. The organismic conceptual lens accepts discontinuity as central. Mechanistic theories stress continuity, by trying to find the antecedent cause for each novelty.

The organismic world view accepts final causes as essential to explaining both stability and direction, because they define the organization of change that is directed toward an end point or highest level. Final

causes are self-regulating and inherent in the organism (Overton, 1982).

In creativity, a special case can be made for intentionality as a final cause, because it is directed toward the construction of novel, useful ideas, products or processes, as well as individual points of view. The organismic world view can embrace the notions of purpose and directionality as final causes; but mechanistic theories do not accept final-cause notions, so explaining purpose and direction is a major difficulty.

Creative individuals interact with aspects of their environment, selecting and assimilating elements that support the development of their systems. Elements that are too foreign are ignored or denied. Thus, environmental factors cannot be causes, but they can affect the courses taken.

The organismic world view, with its concern for systems, organization, rules and direction, has a broad perspective on development (an inclusive viewpoint) and can describe the structuring of the creative individual's purposeful efforts toward a creative product. Although the mechanistic world view is necessary to get the whole picture, my theory is that the organismic lens can incorporate and frame the mechanistic (a micro viewpoint), with its concern for specific observable behaviors and small units.

If authors of theories perceive their conceptual frameworks or world views, they can select other theories compatible with their own and begin to work within a common frame to unite members within the same family of theories. Then, bridges between the two major conceptual frameworks can be actualized, perhaps using the three core notions discussed above.

PERSPECTIVES FROM OUTSIDE THE FIELD

Gifted education suffers from in-breeding. Too often, the same groups of experts and/or their students present at major conferences, are published in TAG journals, and hold offices in various organizations concerned with the gifted. In order for us to gain perspective on the field, so that we can build theories, we must step outside of it. Piaget (1981) stated that a person should read around a subject once he becomes very knowledgeable about it, rather than in the subject.

Perspective from Different Disciplines

Having acquired a sizeable body of knowledge in the fields of giftedness and creativity, we must now begin looking at the development of intelligence, giftedness, talent and creativity from the perspectives of anthropology, the various psychologies, neurobiology, economics, business, politics, artificial intelligence, philosophy, neurobiology, physics and etc., in order to enrich our conceptions and gain perspective. Fetterman (1988), Rubenson and Runco (1990), Storfer (1990) and others have already made efforts in these directions. We need to make concerted efforts to invite individuals from related disciplines to work with us and to share expertise, to fertilize our field and grow toward understanding the optimal development of mind.

Different Cultural Perspectives

We need to be cognizant of the perspectives that are formed by the tacit infrastructure of cultural beliefs and values that Bohm (1987), Hall (1977) and others suggest frame our views and our theories. We see what we want to see and hear what we want to hear. Understanding the influence of these beliefs and values illustrates the importance of considering philosophical positions beyond the western-industrial, for example.

Historical Perspectives: Standing on the Shoulders of Giants

Theories are built on the works of those who have gone before us. "We stand on the shoulders of giants." (Gruber, 1989, citing Sir Isaac Newton). We must carefully examine earlier theories, to determine which aspects have relevance to our unified theories. These theories must be compared to one another by examining core world views held at the time theories were founded, such as whether the world is regular and stable, or whether it is always changing.

A Circle of the Disciplines

Theorizing about optimal creative development reminds me of the fable of the blind men and the elephant. No single person can grasp the whole of a theory for such a complex topic. One theorist explains aspects about the process, another focuses on the person, a third attends to educational applications.

Gruber and Voneche (1977) explain Piaget's analogy of the "circle of the sciences" (a linear hierarchy twisted into a circular form showing the proximal relationship from one science to another) and transform it to a circle of the disciplines, with "creative borrowing" from one discipline to the next. This illustrates that there are natural relationships and affinities among nearby disciplines, and that utilizing conceptions from another discipline by taking a quantum leap out of one's own frame of reference allows for creative breakthroughs (see Goswami, 1988). In addition, networking occurs across and throughout the circle, not just between those disciplines that are next to each other in the circle.

CRITERIA FOR A THEORY

Appropriate criteria are needed to effectively assess the value of existing efforts, separate theories from program applications, and give direction in developing theories. A set of criteria that I proposed in 1988 was divided under four broad categories: the nature of the gifted child; education and identification; framework of the theory; and criteria for analysis and evaluation of any theory related to the education of the gifted and creative. (The list of criteria is too long to include here.)

Analysis of One's Own Theory

The next step would involve careful analysis of a given theory on each of the criteria, preferably applying the criteria to one's own work. Theories within each of the two families of world views should first be analyzed along criteria proposed for theory selection and development (Cohen, 1988). Each theorist could determine what is missing in his or her own theory and seek data from other theories within the same conceptual framework that would complement and enhance it. Theories could then be clustered into families, to form syntheses that would focus on either the organismic approach, wherein systems interact, or on the mechanistic approach, in which specific conditions, short-term problem-solving steps and influences of heredity are examined.

These two giant frameworks, each of which now contains a synthesis of theories related to giftedness, intelligence and creativity — one organismic and the

other mechanistic — must then be integrated. This is a difficult process, because it cannot be completed without violating the central notions of one or the other of these theoretical world views. (Overton, 1984).

Another option would be to compare theories by ranking them on their criteria, perhaps using a chart with the criteria on one axis and the theorists on the other. The most powerful theory would have the greatest explanatory power, organize the most data, serve as an heuristic for research, and be characterized by parsimony, coherence and aesthetics. It would meet the majority of the criteria to the fullest extent. In short, the theory with the highest point total would probably be the most useful. Although this process might be efficient, it could negate a very important aspect—that of the personal relationships theorists must form in order to work creatively with one another toward a metatheory.

Analysis of Theories from the Past

Historical explanations of intelligence (e.g., Galton, Binet, Spearman, Thurston, Guilford, Vernon, Cattell) or earlier theories of creativity could be analyzed by plugging their individual criteria into the preceding process. Surely, some of the theories of these early workers had highly usable notions that could be synthesized into a broad theory for gifted education. For example, Rank's (1932, 1945; in Menaker, 1982) theory of optimum personality development of the artist has considerable implication for child rearing practices, but has been largely ignored.

Extending or Modifying a Theory

A theory is like a structure (Piaget, 1970) that is characterized by:

1. Wholeness: The principles of the theory all fit together into a coherent, logical whole;
2. Self-regulation or maintenance: The principles and boundaries of the theory are firm and clear, providing a framework for integrating new data and giving stability to the whole;
3. Transformation: Aspects of the theory change to accommodate discordant data.

We can determine whether or not a theory comprises these properties by evaluating it, using the criteria provided.

Combining Theories

Metatheories that combine elements of existing theories could be constructed, particularly if they share common conceptual lenses (the same central metaphors and research heuristics) .

THE PROCESS OF GROUP THEORY BUILDING

No individual today can grasp the "whole elephant" of the optimal development of creative intelligence. It is simply too big for one person to see, especially when we begin to realize the complexity and multifarious perspectives that are needed to understand even a single, creative mind! Yet, once theories are appropriately analyzed and characterized as belonging to specific families of theories, a group of theorists could conceivably do so, if committed to helping one another build a metatheory.

From Ownership to *Allship*

To work together in such a fashion requires building a group of individuals who are willing to go beyond their own needs to benefit everyone — from ownership to *allship*. Most theorists have worked for many years in a particular field. Their egos are involved, as well as strong points of view. To let these go could threaten their individual frameworks; therefore, a sensitive, caring, responsive atmosphere must be created so that individuals can do the most difficult of creative things: give up less effective ways of thinking! As Gruber (1981) noted, the difficulty lies not so much in having great ideas, but in negating ideas that no longer work.

MACRO FRAMEWORKS

Four theoretical frameworks can serve to bridge the organismic and mechanistic world views described above. They are quantum theory, systems theory, developmental theory, and chaos theory. A very brief look at each of these will give a perspective on which notions are particularly useful.

Quantum Theory

Idealistic interpretations of quantum theory can combine the mechanistic (stable, *being*) and organismic (dynamic, *becoming*) world views of creativity through the interpretation of intelligence as consisting of both classical and quantum modes. The classical mode forms memory and biases thought toward the habitual. The quantum accesses concepts that exist in the transcendent archetypes of the unconscious mind. Creativity in a quantum framework is focused on both *being* and *becoming*. It has a mechanism, but evolves unpredictably, like a living thing, and behaves predictably and unpredictably. Useful concepts include the quantum jump as analogous to the discontinuity of the creative "Aha!" experience. Also useful are notions of non-locality, the tangled hierarchy of self reference, and the application of the uncertainty principle to human thought. For example, the content of thought relates to particle position, but the direction of thought corresponds to momentum. The idea, that thought springs from underlying levels of unconscious order into manifestation through the classical mechanism of the brain, holds the most promise as an explanation of creativity and giftedness. (Ambrose, 1990).

As it relates to discontinuity, causality and purpose, the quantum theory clearly embraces discontinuity. It cannot be traced during the actual jump; it is either in one position or the other, but never between the two.

As we relate the quantum theory to causality, we encounter the concept of unpredictability. We can make electrons jump by providing energy, but it is not possible to predict specifically when electrons will jump. This parallels the planning of programs for gifted and creative youth. We can provide general operative enrichment and acceleration opportunities for such students, but cannot predict when a particular student will become creative.

Purpose is more difficult for quantum theorists to accept, because they view quantum jumps and creativity as much less directed. Perhaps it is helpful to think of purpose as a classical process that complements the quantum process.

For more background on the quantum theory, the

reader should review Goswami's (1988) article.

Systems Theory

Interacting, open, dynamic systems allow us to conceptualize the complexity of the creative individual in his social and physical environments. An open system is a set of components characterized by:

a) organization;

b) boundaries;

c) the whole system is more than the sum of its parts;

d) the whole system maintains itself by exchanging energy with the environment, and either evolves or becomes extinct (von Bertalanaffy, 1967; Land and Kenneally, 1977).

Each system is composed of smaller systems and is part of larger systems, all of which are interactive. The systems theory is an interdisciplinary model of organization that explores structural similarities across fields, serves as a vehicle for integrating, and generates narrower theories.

Systems theories, because of their attention to differences and similarities among sub-systems, allow analysis of relationships, explain how changes in one system affect other systems, and focus on the different content, conflicts and principles of each system. Systems theories allow for equifinality, in which different routes may be taken toward the same end; this is useful in creative development, which deviates from the linear path typical of structural theories. There is an exchange of material energy during the build-up of order and organization. Destructuring is viewed as indicative of reconstruction and transformation, which are integral to the creative process. (von Bertalanaffy, 1967; Gruber and Voneche, 1977; Khatena, 1979; Land & Kenneally, 1977) . These aspects make systems theories particularly useful in explaining optimal and creative development.

Several theories relating to optimal development are already fitted into the systems framework. Theorists such as Clark, Cohen, Feldman, Gruber and Jellen already describe their views as essentially systems theories. Systems theories are organismic because of their core notions of change and activity, but the need for recursion to micro-level views allows for the inclusion of mechanistic theories.

Related to three pivotal notions of discontinuity, causality and purpose, the systems theory embraces discontinuity through disintegration for transformation and energy exchange, both of which are useful in considering creative development. Central to the systems theory is the idea that the system must either evolve to the highest level or decay into entropy. This principle could integrate purpose, the setting of goals and the work toward achieving them, in optimal creative development. Causality is always framed by the concept that the system interacts with other elements and systems. Therefore, the complexities of multiple variables and other possible interactions make cause-and-effect associations difficult to explain.

Developmental Theories

Developmental theories are useful, because they focus on both the structure and the function of systems as they evolve. Developmental theories are organismic, in that they view the world as dynamic and constantly changing. Thus, developmental theories would be most useful for organizing other organismic theories; however, within the framework of development over time, developmental theories could assimilate a view of the organization at a given moment, a mechanistic view that is focused on the present.

Development means that the individual goes through certain, distinct levels or stages of organization over an extended span of time, each level modifying the way he views the world. This is the structural aspect. There is also the functional aspect—how the individual changes to higher levels of structure—viewed as a process of construction. The structural and functional aspects of development have been addressed in the works of Piaget, who focused on universal cognitive development, that is, development that occurs in children of all cultures, without specific training. Many of Piaget's theories can be applied to adults and to systems other than the cognitive.

Several key ideas from developmental theories are useful in organizing other theories, particularly those of the organismic family of theories:

1. The individual is *active*, assimilating and accommodating those elements that relate to his own idiosyncratic organization. Neither heredity nor environment directly causes development, but interaction of the individual in the world does. The creative individual is active, purposefully seeking resolution; he is not merely a passive recipient.

2. *Competence* signifies the highest level that a given organization can accomplish. This can be applied to systems other than the cognitive. Optimal development implies highly competent systems.

3. *Equilibration* can be thought of as occurring internally to the individual, in each of several systems. Equilibration is Piaget's (1977) avenue for explaining cognitive structural change, a balance among events in the environment (social, physical and/or mental), and changes in the organization of the individual as to how he deals with these events. This mechanism can explain how systems change over time.

4. All structural growth is based on *conflicts*, disturbances, contradictions, or gaps in the organization or *knowing* systems. Conflict can also be thought of as the source of development in other, internal systems. Conflict is inherent in all organismic theories, except the humanist. When the creative individual perceives a gap, lag or conflict at the "edge" of a field, purposeful effort toward a new solution becomes activated.

5. *Time* is required in order for development and creativity to occur.

6. *Intelligence* is the capacity for a*daptation* — the more highly adapted, the more intelligent. The more one can cause the environment to adapt to the individual because of the value of products or ideas created, the more creative one is.

Developmental theories relate to the three concepts of discontinuity, causality and purpose in the following ways: Developmental theories clearly embrace discontinuity, particularly through "reflective abstraction," Piaget's mechanism for movement from one level to another. In the reflective abstraction, the individual constructs a relationship not inherent to the elements which he is putting together—a discontinuity with that which precedes it. As it relates to purpose,

Piaget's theory embraces the final-cause notion of the "ever widening spiral of knowing," in which each equilibration leads toward a higher and wider level of understanding, and development proceeds toward the highest level of equilibration possible. Piaget's theory, like systems theories, does not clearly explain direct antecedent causes, because the individual is always viewed as interactive with his environment. This theory has led me to consider cause in terms of catalysts or influences.

Chaos Theory

Chaos theory, the new theory of non-linear dynamic systems, appears to encompass quantum, systems and developmental frameworks (Sterling, 1990). The human mind, viewed as a non-linear dynamic system, is subject to chaotic dynamics. This means that nuances, dependence on initial conditions, reiteration, recursion and fluctuations are characteristic of such systems. When a nonlinear dynamic system is pushed to a state that is far from equilibrium, it can spontaneously self-organize at higher levels of complexity. In the realm of creativity, this corresponds to the "Aha!" phenomena. Another important aspect of chaos theory is scaling phenomena, which demonstrates similarities among the various levels of complexity. For example, the long-term creative process is structurally similar to the moment of inspiration, in the same way that the structure of a tree is reflected in the structure of branch, twig, and veins of the leaf.

Chaos theory represents an emerging world view, which can resolve the questions and tensions that arise when creativity is viewed either from a mechanistic or an organismic perspective. Chaos theory is deterministic. Systems develop and change as a result of hereditary, environmental and personality factors, as well as random chance—all of which are causes of creativity. Chaos shares this cause-and-effect orientation with the mechanistic view, although chaos theory rejects the possibility of prediction, based on the dynamic interplay of any system with its ever changing set of initial conditions. This fundamental unpredictability frustrates the researchers who are working to define a set of traits or circumstances which, if a child manifests them, would guarantee his becoming a productive, creative adult.

Chaos theory shares with the organismic family of theories the idea that future purpose influences or causes creative behavior. Unlike the mechanistic paradigm which states that cause must precede the effect, this new world view acknowledges that future goals profoundly affect the "initial conditions" of the creative individual.

Finally, and most importantly, through its description of how dynamic systems can spontaneously self-organize at a new, higher level, chaos theory is a major breakthrough toward an explanation of how novelty arises (Sterling, 1990 pp. 23-24).

As it relates to discontinuity, chaos theory bridges the disagreement of discontinuity and continuity by accepting determinism—a continuous focus—yet recognizing that prediction is not possible. As it relates to causality, the same determinism clearly spells out causal linkages to initial conditions, as well as the acceptance of heredity, environment and chance as causal; but chaos theory accepts the unpredictability of specific changes or behaviors, which limits causes to general or theoretical applications, not specific cases. Chaos theory does not see purpose as a final cause; rather, purpose resides in the initial conditions, which are constantly being revised—more a pushing, than a pulling, effect.

SUMMARY

These frameworks and issues would help the field build a metatheory to explain the development of optimal creative intelligence. Such a metatheory would be central to the education of gifted and creative youth. We need to focus on theories of creativity and intelligence; and the precision of definition is essential. *Any* theory *must* be built on both past and current works.

Our awareness of the conceptual lens of each theory is critical. Theories can be grouped into two great world views—the mechanistic and the organismic. The organismic framework holds more promise to become the macro set. Although bringing these two frameworks together poses some problems, doing so is integral to understanding creativity and optimal development.

Perspectives from outside the field are critical in order to gain a sense of the whole, i.e.: using the metaphor of a "circle of the disciplines." Use of criteria to evaluate theories is helpful. The group building process is fundamental—the going from ownership to *allship*. Creating a safe and beautiful setting, providing opportunity for participants to own the problem, setting a tone of respect, collaboration and dialogue, as opposed to debate, are essential in the building of a macrotheory. The four theories considered above may provide valuable bridges—within given families of theories and across the two major world view families.

I would be grateful for ideas or suggestions from readers regarding this theory-building process. Together, we can provide possibilities for great leaps forward in our field. It is an honor to be represented here and to be able to continue to work to build the conceptual framework needed for the advancement of our field.

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For forty-odd years in this noble profession,
I've harbored a guilt and my conscience is smitten,
So here is my slightly embarrassed confession--
I don't like to write, but I love to have written.
Michael Kanin

MY LIFE AND HOW IT GREW

Julian C. Stanley, Jr, Director of Study of Mathematically Precocious Youth, (SMPY), Johns Hopkins University, Baltimore, Maryland

The Background Years

The period that made a great difference in my life lasted 44 months. It began on January 6, 1942, less than a month after the Japanese bombed Pearl Harbor, when I "beat the draft" by enlisting in the Chemical Warfare Service. My Army Air Corps service ended on September 6, 1945, 18 days before I began course work toward a master's degree in educational and vocational guidance and counseling at the Harvard Graduate School of Education. That "stretch" as an enlisted man in a service outfit, 28 months of it overseas in England, Algeria, Italy, and Corsica, changed me from a routine high-school teacher to a frenetically achievement-motivated graduate student who ever since has found his greatest professional satisfaction in study, research, writing, and other scholarly activities.

In a small-city school system in a suburb of Atlanta, Georgia, where academic competition was slight, I had skipped the fourth grade. In high school I was studious but not scholarly, taking four years of Latin, physics, chemistry, etc., and making excellent grades but not doing much extra work in courses. I managed to be graduated as the "best all-round boy" in a class of 177 students while still 15 years old, because my birthday occurred in July and there were only 11 grades. The year was 1934, in the middle of the Great Depression.

I could claim that lack of money drove me to the nearby unselective State-supported residential West Georgia Junior College rather than a more appropriate institution such as Emory University or Harvard, but that would be untrue. Ironically, my father was much more prosperous from 1933 onward than he had been earlier. My under-aspiring was due to lack of initiative, poor judgment, and great desire to get away from home. Also, I had no suitable academic models or advisers.

As I look back now, the two years at junior college were fairly well spent, even though I had to study too little to make B's and A's. Good teachers were plentiful in those days, and the school had a number of them. The social life was really heady for me, and I had all the time in the world for it. I received a junior-college certificate while still 17 and felt infinitely learned, but my bad academic judgment persisted. A friend at the only teachers college in the state (then South Georgia Teachers College, now Georgia Southern University) persuaded me to enroll there that summer.

Except for organic chemistry and one other subject, this proved to be an intellectually uninspiring atmosphere, so I took extra courses (as, oddly, I had also done in junior college) and completed requirements for a B.S.Ed. degree in August of 1937, one month past my nineteenth birthday. A history professor suggested graduate school at the University of Chicago to me, but that subject was not appealing enough at the time. My other professors assumed that the main, and perhaps the sole, purpose of a teachers college was to produce public-school teachers.

I did not bother to debate the topic even with myself, but took the line of least resistance and set my mind to getting the best available position as a high-school teacher. The Fulton County (Atlanta) School System saved me from entombment in a small south Georgia town; there I taught a total of ten different subjects, including science and mathematics, for four and one-half years. At the time of my departure for military service I was 23 years old.

That brings me back around to the long period during which my ambition grew and I came to see the life of student and scholar as preferable to that of routine teacher. In retrospect, I am glad that the assignment to Officer Candidate School (OCS) came too late, after I was already in England, and I remained an enlisted man--top rank, staff sergeant--throughout the war. The utter intellectual vacuum of an isolated company storing mustard gas and handling incendiary bombs gave me time to think. The petty indignities to which any enlisted man is constantly exposed made me determined to rise in the occupational hierarchy after the war. I am particularly glad that ten months in Algeria, where I was a company clerk, and ten on Corsica as the Wing Chemical NCO were virtually devoid of stimulating activities, other than opportunities to read a great deal, learn to touch-type, and take a couple of USAFI courses.

Upon my return from overseas in late 1944, I was soon transferred to Third Air Force Headquarters in Tampa to wait out the war --but not before I delved into some career materials at the returnee center in Miami and decided to study guidance under the "GI Bill" at a great university such as Chicago, Columbia, or Harvard as soon as the war ended. I had chosen undemanding colleges too often before. At least, this error of judgment could be avoided as a graduate student.

It occurred to me, of course, that with my eight-year-old degree from a less-than-illustrious teachers college I might find the curricula at a major university difficult, but I chose Harvard (because to me it seemed the most prestigious of the lot). I was a well-conditioned 27-year-old and worked furiously. We early ex-GI's brought consternation to regular-age Ivy League students because of the vigor, seriousness, and effectiveness with which we attacked every assignment.

By the end of the first semester it became obvious that work at the Harvard Graduate School of Education

was readily accessible to me and fascinating. I discovered educational psychology, including measurement and statistics under Professors Truman L. Kelley and Phillip J. Rulon. The second year I continued, aided by a $600 fellowship (tuition then was $200 per semester!), the GI Bill, and a half-time instructorship in psychology at a local municipal junior college. That year I took ten psychology courses, wrote ten term papers, and made ten A's. The pattern was firmly set. I had received the Ed.M. degree in 1946 in educational and vocational counseling and guidance, after two semesters of study. The Ed.D. degree in experimental and educational psychology came after three more years, during the last of which I was an incredibly hard-working full-time instructor in education at Harvard.

The intellectual vacuum of the war interacted with the lure of 44 months of GI Bill support to launch me into the university orbit. Without both I probably would have retired from public school teaching in 1967 with 30 years of routine service. It seems most unlikely that I would have been the author or editor of 13 books and some 450 other published items, or active in national professional associations.

The Rise of SMPY

Sometimes I view my life in five phases: 1918-1942, growing up and teaching in high school; 1942-1945, the war; 1945-1949, graduate study; 1949-1971, educational psychology, especially statistics, testing, and experimental design; and 1971 to the present, finding youths who reason extremely well mathematically and helping them get the special, supplemental, accelerative educational opportunities they sorely need and, in my opinion, richly deserve. Although not quite the "five faces of Eve" schism, this partitioning does sometimes leave me a bit amazed about how the five Julian Stanleys differ. I don't always recognize the other four as being I. It is almost as if I have lived five different lives. Each in turn has had some distinctly interesting aspects, and I can see how each has led logically to the next stage. I enjoyed the challenges of creating the Laboratory of Experimental Design and training a large number (about 18) of Ph.D. degree recipients in statistics and measurement during the years 1961-1968 and doing research in those areas myself. Probably my greatest satisfaction, however (but not greatest professional recognition) has come from the Study of Mathematically Precocious Youth (SMPY), which arose rather adventitiously in 1971. The events leading up to it may be worth sketching.

How SMPY Started

During the summer of 1968 there was held on the Homewood Campus of the Johns Hopkins University a program about computers for junior high school students. One of these, who had recently completed the seventh grade, was Joseph Louis Bates. He knew much about computers and helped some graduate students with their use of the Fortran computer language. His knowledge and performance so impressed one of the instructors, Doris K. Lidtke, that she cast about for someone to help Joe. Ms. Lidtke had heard of me. She called and told me about 12-year-old Joe.

I was busy that summer and fall, and therefore did not talk with Joe until January of 1969. He seemed so able and advanced that I administered several difficult tests to him including the Scholastic Aptitude Test. His scores were remarkable. I might have half-believed he was the ablest kid in the United States, perhaps one of a kind, had I not known of Leta Hollingworth's above-level testing during the 1920s and 1930s (Stanley, 1990).

It was obvious to Joe, his parents, and me that just entering high school as a ninth grader in the fall of 1969 would not provide nearly enough advanced subject matter for him. I tried to find a public or private school in the Baltimore area that would let Joe take mainly eleventh and twelfth grade honors courses, but encountered strong disbelief that he could handle them well. Finally, in desperation, I suggested to Joe and his parents that perhaps he might become a regular freshman at Johns Hopkins that fall at age 13 (he was born in October) and take a light load of subjects likely to be relatively easy for him: 13 semester-hour credits of physics, honors calculus, and computer science. We were apprehensive about this, but willing to give it a try. I approached Dean Carl Swanson and described Joe's abilities without telling him Joe's age and grade. The Dean was impressed. When I told him that Joe was just 13 years old and had completed only the eighth grade, he didn't turn a hair, but just exclaimed, "Tell Brinkley [the Johns Hopkins Director of Admissions] I said admit him."

That first semester, Joe astounded all of us with his fine grades, achieved without undue effort. He went on to receive his B.A. and M.A. degrees in computer science and begin advanced graduate work at Cornell University while still 17 years old. He earned the Ph.D. degree in computer science. Currently, Dr. Bates is a researcher in computer science at Carnegie Mellon University.

Another youth, as able as Joe, heard about this early admission and insisted on coming to Johns Hopkins the next fall, also at age 13. He did well, too. Two years later, in 1972, a local boy came at age 16. He made 40 credits of A the first year, transferred to Princeton University, and graduated there, Phi Beta Kappa and summa cum laude in mathematics, the month he became 20 years old. This precocious young man is now an outstanding cardiologist.

These three cases were enough to suggest that there were quite a few extremely highly talented youths who needed far more stimulation than could be provided by almost any high school. They should be found and have special, supplemental educational opportunities in mathematics and related subjects devised for them. (For a modern update, see Brody and Stanley, In press.)

Fortunately, in 1970 I heard of the newly created Spencer Foundation in Chicago. A quickly prepared four and one-half page proposal to it yielded me $266,100 over a five-year period with which to start the Study of Mathematically and Scientifically Precocious Youth (SMSPY), later shortened to SMPY without deemphasizing its involvement with scientifically talented boys and girls. This enabled me to get started on a substantial basis, officially as of September 1, 1971, but actually in June of that year, when Baltimorean Daniel P. Keating arrived fresh from Holy Cross College as a beginning graduate student and SMPY's first research assistant. He and I spent that summer reading or rereading publications about gifted children, espe-

cially Lewis M. Terman's famed five-volume Genetic Studies of Genius Terman's pioneering longitudinal studies of high-IQ youths.

Lynn H. Fox, a mathematics teacher and educational psychologist from Florida, joined us early that fall as a graduate student. She, Dan, and I and several others began searching for good ideas to try out on youths who reason exceptionally well mathematically. We remembered the old saying, "If you want to have rabbit stew, you must first catch a rabbit. Otherwise, you'll have squirrel stew, chicken stew, or perhaps no stew." This cogitating led to our conducting in March, 1972, a systematic talent search for quantitatively apt boys and girls and starting a fast-paced precalculus class three months later. In that initial talent search, 450 able young students in the Baltimore area, most of them seventh and eighth-graders, took two mathematics tests (Scholastic Aptitude Test - Mathematical and Level I of the College Board Mathematics achievement test) and/or both forms of the Sequential Tests of Educational Progress Science test, college freshman level.

Via the talent search we found a large number of highly talented youngsters. Our results were reported promptly at professional meetings and in the professional literature, especially Stanley, Keating, and Fox (1974). We continued the talent searches, with ever increasing geographical diversity and numbers.

The first fast-paced math class was highly successful. All of its students who persisted on Saturday mornings beyond the summer of 1972 learned at least two years of algebra or geometry by June of 1973. More than half of them learned much more by June or August of 1973, some completing the four and one-half years of precalculus from Algebra I through analytic geometry in a total of about 120 class hours. Further details and references are contained in Stanley and Benbow (1986) and Stanley (In press a and In press b)

This class led to many other experiments by SMPY with various ways to help mathematically talented boys and girls learn mathematics and related subjects such as physics, chemistry, and biology much faster and better than they could in nearly any regular school class (e.g., Stanley and Stanley, 1986). Those were thrillingly innovative days. We knew we were breaking new ground and moving along for better ways to till it.

Principles, Practices, and Techniques of SMPY Promulgated

SMPY's staff remained small, consisting chiefly of me, with a full teaching load not much related to its work, several graduate students, William C. George, one or more undergraduate work-study students, and Lois S. Sandhofer, our 80%-time secretary and administrative assistant. In all of SMPY's talent searches we administered the Scholastic Aptitude Test (SAT) ourselves and scored it by hand, that being much faster and a bit more accurate than if the answer sheets were sent off to be scored by machine. Along with SMPY's many developmental, research, and service activities. This constituted a great operational load. In 1979, I decided to give away the annual talent search and the fast-paced classes by having created on the Johns Hopkins campus a new group to handle them. In about 15 minutes of conversation, President Steven Muller and I set up the Office of Talent Identification and Development (OTID), to start that fall. A few years later its name was changed to the present form, the Center for the Advancement of Academically Talented Youth (CTY). OTID and CTY have always been independent of SMPY, and vice versa.

Under Mr. George's directorship initially, OTID was an instant success. It "farmed out" the SAT testing to the regular local testing centers set up by the Educational Testing Service, thereby also getting rid of the need for administering and scoring its two parts, Mathematical and Verbal. OTID enlarged the talent search area to 13 states, plus the District of Columbia, from Maine to West Virginia. (Later, CTY added Alaska, Arizona, California, Hawaii, Oregon, and Washington.) Criteria for entering the search were changed to include students talented verbally but not necessarily mathematically. A residential summer program of quantitative and verbal courses was held for three intensive weeks during the summer of 1980 at St. Mary's College in southern Maryland, a state supported liberal arts institution. Another was held there in 1981. From 1982 onward, CTY has operated its summer program on campuses across the country and in Switzerland. It seems likely that a similar program will soon be set up in Ireland, with CTY's and SMPY's assistance but administered independent of them. The current director of CTY is Dr. William G. Durden.

I encouraged the then-provost of Duke University, Dr. William Bevan, to set up there in 1980 an organization similar to OTID. It has functioned ever since as the Talent Identification Program (TIP). Soon thereafter, I helped Dr. Joyce Van Tassel-Baska set up the Midwest Talent Search at Northwestern University. It is now called the Center for Talent Development. The University of Denver set up the Rocky Mountain Talent Search as well. These four regional talent searches and their, and other, residential summer programs serve all 50 states. There are also somewhat more local searches and providers of fast-paced classes across the country.

Success of the Idea

Of course, I've been greatly surprised and extremely pleased by the extent to which SMPY's conceptualizations have become disseminated successfully. No group founded on these principles has yet failed. Amazingly, all have flourished, even in the absence of most governmental or private funding possibilities. The talent searches and academic summer programs since 1980 are largely self-supporting because of fees charged the participants. On the other hand, SMPY at JHU has provided nearly all its services without any cost to its "proteges." This was made possible by a series of grants from a number of philanthropic foundations, most notably substantial support from the Spencer Foundation for 13 consecutive years, 1971-1984, and an anonymous donor more recently. SMPY has had only three government grants, two short-term ones from the National Science Foundation a decade ago and one later from the U.S. Department of Education.

The success of these various enterprises is mute testimony to the intellectual hunger that many academically talented youths feel. They are like a person dying of thirst who is offered little or nothing to drink. Well-meaning individuals bring food, flowers, books, or money, but no water, as "enrichment" programs may tend to offer goodies not attuned to the specific intellec-

tual hunger the gifted child needs assuaged (Wallach, 1978). Great mathematical reasoning ability calls for systematic opportunities to learn mathematics at the right level and pace. An interesting social studies discussion or a session on the greenhouse effect can hardly give this type of student the intellectual thrill, stimulation, and satisfaction for which his or her special quantitative talent cries out.

Repeatedly, my associates at SMPY and I decry this mismatch everywhere we can: in professional meetings, at conferences, in articles and letters to editors, in books, by telephone, in letters from us in response to things we've read--anywhere and anyhow we might make an impression on educators, parents, and especially the talented youths themselves. We started off with three Ds, the subtitle of our first book (Stanley, Keating, and Fox, 1974): Discovery (finding the talented), Description (learning more about them), and Development (providing them special educational opportunities, including much information). Soon we added a fourth, equally important, D: Dissemination. Besides our newsletters, correspondence, and conferences, we send out, without charge even for postage, about 500 sets of reprints and memorandums each year. We are ever alert to opportunities to influence and help those who fall within the "ball park" of SMPY's goals, even when they have not solicited our assistance.

When we began in 1971, probably fewer than a dozen boys and girls aged 13 or less took the SAT in a given year. In 1990, about 100,000 did. Most were tested in late January. Walk into a College Board testing site in your locality in January and see for yourself. In residential, academic summer programs during 1990 there were about 5000 enrollees. Drop in next summer at Dickinson College, Franklin and Marshall College, Skidmore College, Wheaton College (in Massachusetts), the College of Redlands, Duke University, Northwestern University, Iowa State University, or elsewhere in this set of programs, and see for yourself how eagerly the young students there pursue their studies--for example, precalculus mathematics five or six hours each day for three weeks, or intensive German. Unless you are already accustomed to this type of program, it is likely to amaze you.

Of course, SMPY's work thus far has been only a drop in the bucket. Even yet, many talented boys and girls have never heard of the talent searches or summer programs. Many parents cannot afford them. Much dissemination, development, and research must still be done.

Portents for the Future

As I write this, our country is deeply embroiled in an astronomically expensive savings and loan scandal, a huge and ever-increasing national debt, large annual national deficits that can only become larger, problems with AIDS that are sure to get much worse, severe drug problems, great increase in illegitimate births and single-mother homes, much homelessness, and poor educational performance of American school children, many of whom work far too much at dead-end jobs in order to indulge in the rampant materialism that TV and other ads encourage. Why should one bother to care about idealistic enterprises such as SMPY and CTY in the face of this invitation to pessimism?

But remember that the United States has almost always been in terrible shape. Are we worse off now than at the end of the War Between the States? During the Great Depression? Time will tell. Meanwhile, there are some reasons to be guardedly optimistic about the education of the ablest. For example, in the 1990 International Mathematical Olympiad (IMO), which pitted high school teams from 53 countries against each other, the United States ranked third, behind China (first) and the Soviet Union. Five of the six persons constituting the U.S. team were members of SMPY's "700-800 on SAT-M Before Age 13 Group." During the five years 1986-1990, 18 of the 30 (i.e., 60 percent) of them were. We inform our "proteges" from age 12 or younger that there is an IMO competition each year and that some of them are able enough to be among the six chosen from about 400,000 examinees. Information, encouragement, and role modeling are powerful tools for aiding the academically talented.

For me, the message of SMPY is simple: find youths who reason extremely well mathematically before age 13 and help them get the special, supplemental, accelerative educational opportunities they must have in order to use their abilities optimumly and move toward satisfying personal and professional lives. That formulation gives me the same kind of exquisite pleasure that creating an intricate experimental design once did.

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WHAT THE GIFTED NEED: TOWARD A GENERAL UNIFIED PLAN FOR GIFTED EDUCATION

Jessie H. Sanders, President, Illinois Council for the Gifted, and Leonard H. Sanders

What do the gifted need? This question represents the point to which we have come in the advocacy of gifted education, in Illinois and throughout the nation. Over the past 15 years, the cause of gifted education has progressed from a largely uncharted territory, viewed as a luxury by legislators and educators alike, to, at best, an integral part of the curricula of most school systems in the United States. Recent cutbacks notwithstanding, appropriations have increased slowly but steadily, even during periods of economic difficulty. Public awareness of the importance of gifted education has risen dramatically, resulting in the formation of a number of support organizations and advocacy groups at the local, state, regional and national levels. In short, gifted education has come of age. With all this machinery firmly in place, the question remains: What do the gifted need?

Solutions to this question vary widely among school districts, according to funding, the number of students served, geographic circumstances, and the personalities and tastes of gifted program directors. In some areas, gifted learners are offered after-school enrichment, but there is little acceleration or differentiation during the regular school day. Other systems place gifted in accelerated classroom environments, but offer little in the way of outside enrichment. Many students are gifted only on Thursday afternoons from 1:30 to 3:00.

Toward the development of the best possible learning environment for all gifted students, the time has come for a General Unified Plan for Gifted Education, a basic structure from which gifted programs can effectively be built. Such a platform would not presume to dictate the specifics of each school system's gifted program; rather, it would suggest a well-rounded outline, adaptable to any school environment. Such a platform would guarantee the awareness and development of those skills most important for gifted learners. It would also allow school districts to coordinate their services, giving the gifted opportunities to interact with their intellectual peers from other schools, even from other states. Finally, this platform would make gifted advocacy uniform throughout the state and between states. This advantage would enhance advocacy tremendously.

The foundations for such a General Unified Plan are already in place. Networking among advocates of gifted, while not perfect, is extensive. Numerous support groups exist in every state, many with regularly scheduled conferences and meetings. Ideas about gifted are disseminated rapidly through local and state bulletins, newsletters and journals. The adoption of a platform could be achieved rapidly once it became reality.

Devising such a comprehensive platform would not be an easy task. The General Unified Plan would have to be researched thoroughly and carefully, utilizing input from every available source. Parents, teachers, administrators, educational psychologists and gifted children, themselves, could contribute unique, important insights as to the best possible ways to construct this platform. Through my experience with gifted education, I have found several concepts and methods to be of critical importance to the maintenance of an effective, well-rounded gifted program. Some points I would like to see included in the General Unified Plan include:

Standardization of training for teachers of gifted. Those who teach our gifted learners should have a knowledge of the ways in which their students are different than regular learners, as well as an understanding of tried and current gifted trends, philosophies and materials. Teachers of the gifted should be prepared to create appropriate, challenging learning experiences for their students.

A general guide for the content of gifted programs. Such a guide would include a balance of accelerations and enrichments; an emphasis on higher-level thinking skills and problem-solving techniques, technological subject matter, and the fine arts; and a global scope, including the study of foreign language and culture, international current events and other materials as available. The knowledge base of the gifted student should be as broad and as deep as possible.

Standardization of gifted identification guidelines. Such a system would ensure that gifted students are selected and served fairly and appropriately. Achievement and IQ test scores, teacher recommendations and other factors should be analyzed and a common method of identification determined.

Tracking in the regular classroom. Placing gifted learners with their intellectual peers is a vitally important part of the General Unified Plan. This technique stimulates gifted students intellectually, challenging them to achieve and learn to the best of their ability. In serving the cause of gifted, we should be advocates of consistent tracking in the classroom at all grade levels.

The initiation of the General Unified Plan for Gifted Education would be a huge undertaking, requiring the efforts of supporters of gifted education at all levels. Educators and parents must work together to convince the state legislatures that such a program is not only advisable, it is necessary and feasible. As members of gifted advocacy groups, it is our place to expand the awareness of the need for such a plan and to assist in its creation and adoption.

The points I have mentioned above are basic themes I believe the plan should include. The General Unified Plan would not place requirements, restrictions or limitations on any gifted program. It would suggest new ideas and areas in which already existing gifted programs can be expanded and/or modified. It would also provide a nationwide model, for gifted programs just getting started to study and develop. The General Unified Plan for Gifted Education offers numerous benefits to educators, administrators, gifted program directors, and advocates of gifted education; but its most significant beneficiaries will be the students, the gifted of our nation. It's what the gifted need.

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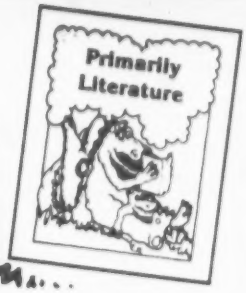

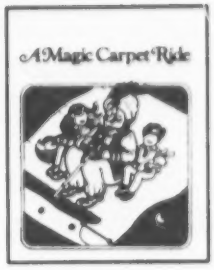

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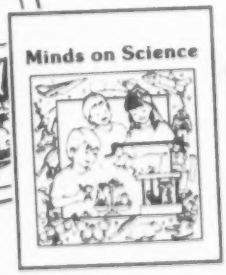

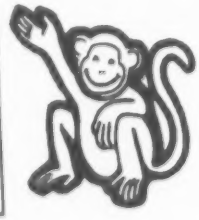

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